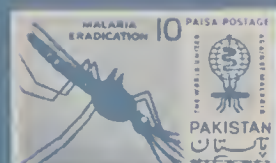
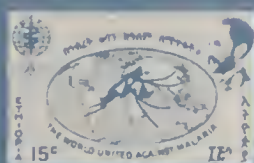
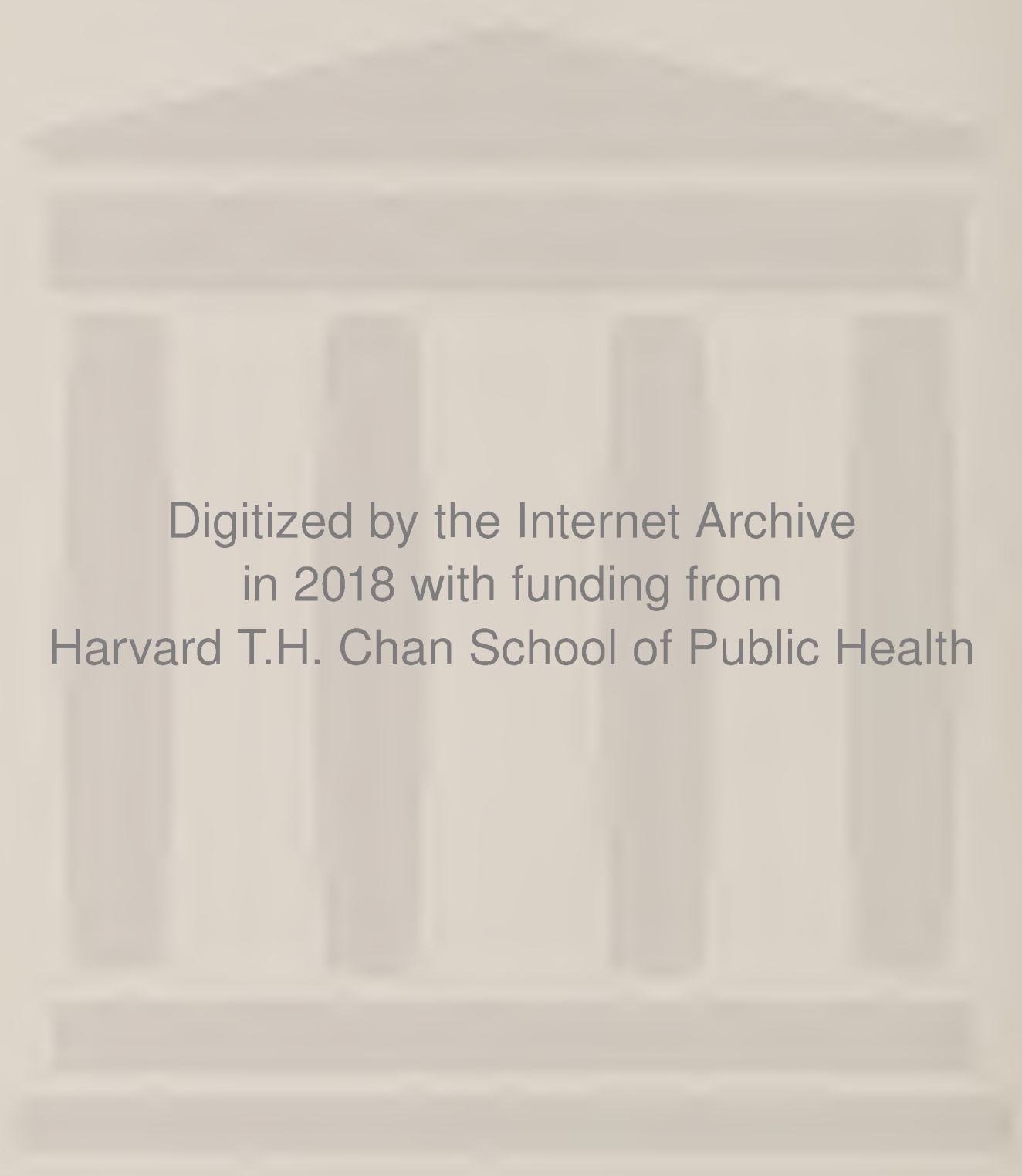


H S P H

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82	Physicians
2	Psychologists
5	Dentists
5	Social Workers
9	Statisticians
4	Chemists
3	Industrial Hygienists
2	Radiological Hygienists
4	Nutritionists
1	Chemical Engineer
4	Biochemists
1	Administrator
1	Health Educator
5	Engineers
1	Home Economist
2	Nurses
2	Sanitary Engineers
1	Toxicologist
1	Pharmacist



Tamag, Philippines

"... The day is short, the work is great, the laborers are tarrying, and the Master of the House is impatient. It is not for you to finish the work, but you are not free to neglect it ..."

Chapters of the Fathers



Bombay, India

"In dreams begins responsibility."

Old Play



Mangala Pura, India

CLASS OF 1966

The Harvard School of Public Health

Boston, Massachusetts



Roy Thompson



Roy Thompson



Wide World Photos



A word from the editors...

We suggest you look at the 1966 yearbook as soon as you can, and again ten years from now. At that time, you may ask yourself whether people at the School of Public Health in 1966 were anticipating the problems to be faced by public health and its component specialties in the '70's. We hope your question will be answered if you re-read what faculty members and students have written in response to the following question: what would you like to see accomplished by people in your field in particular and in public health in general in the next decade or two? We also hope that the placing of students' and teachers' remarks alongside each other will convey a sense of the give and take of this one year at the School of Public Health.

If you are looking at this book for the first time in 1976, what you read may impress you as dated. Remember, however, that 1976's conventions were 1966's imaginings. Remember that public health and schools of public health were in 1966 just beginning to acquire enough courage and a sense of obligation to face up to the problems created by explosive rates of population growth, urbanization, and the aggrandizements of technology. Remember that the leaders of public health in 1966 were just beginning to think of working with medical schools and with planners concerned with cities, agriculture, and industry. Remember that the comprehensive community-medicine program for Roxbury set up by the School of Public Health together with Boston's three medical schools in the early '70's was mere parlor talk in 1966. And, remember that the programs for the "septic fringes" of Latin America, Asia, and Africa, worked out by the Harvard-MIT Joint Urban Studies Unit in conjunction with the Departments of Epidemiology, Demography and Human Ecology, Tropical Public Health, and Nutrition, had not even been thought of in 1966, except by types calling themselves ecologists. (These programs dated from the time when epidemiologists joined up with systems analysts from the Joint Urban Studies Unit for the purpose of determining an optimum control program for cholera in Calcutta, whose population had reached twelve million in 1970.)

People in 1976 may also wish to recall that Hans Zinsser's musings about public health and the world during World War I could well have applied to the '60's:

At the moment, while the world is an armed camp of suspicion and hatred and countries are doing their best, by hook and crook, to push each other out of the world's markets, to foment revolutions, and steal each other's political and military secrets—organized government agencies are exchanging information concerning epidemic diseases; sanitarians, bacteriologists, epidemiologists and health administrators are cooperating, consulting each other, and freely exchanging views, materials, and methods, from Russia to South America, from Scandinavia to the tropics . . . It is all a part of the strange contradictions between idealism and savagery that characterize the most curious of all animals . . .

ELIHU RICHTER
ALFRED CHENG
GUTHRIE TURNER

The editors



Smith, Kline, and French—
Philadelphia Museum of Art



... Our leader ...



... Getting started ...

Acknowledgments

We wish to acknowledge gratefully the constant help and continuous good humor of Miss Claire Wasserboehr, without whose many-faceted assistance this book would never have reached completion.

Contributors of many, many hours, much talent, and all the photographs are Alfred Cheng, Anthony Jong, Samuel Youngman, and Clarence Jernigan.

Art editor, producer, reproducer, and creator is Carolyn Peters, honorary class member by virtue of her incomparable work, as well as of her husband.

The text for the book has been contributed almost entirely by faculty members, visiting lecturers, and occasional students, whose cooperation (sooner or later) we gratefully salute. (Appropriate credits appear with each article.)

Indispensable *felchers* at layout time were Richard Brown, Nancy Colson, John Davies, Halmond Dyer, William Moore, and Melva Vives.

Finally, we wish to thank Winthrop Laboratories for underwriting the costs of publication.



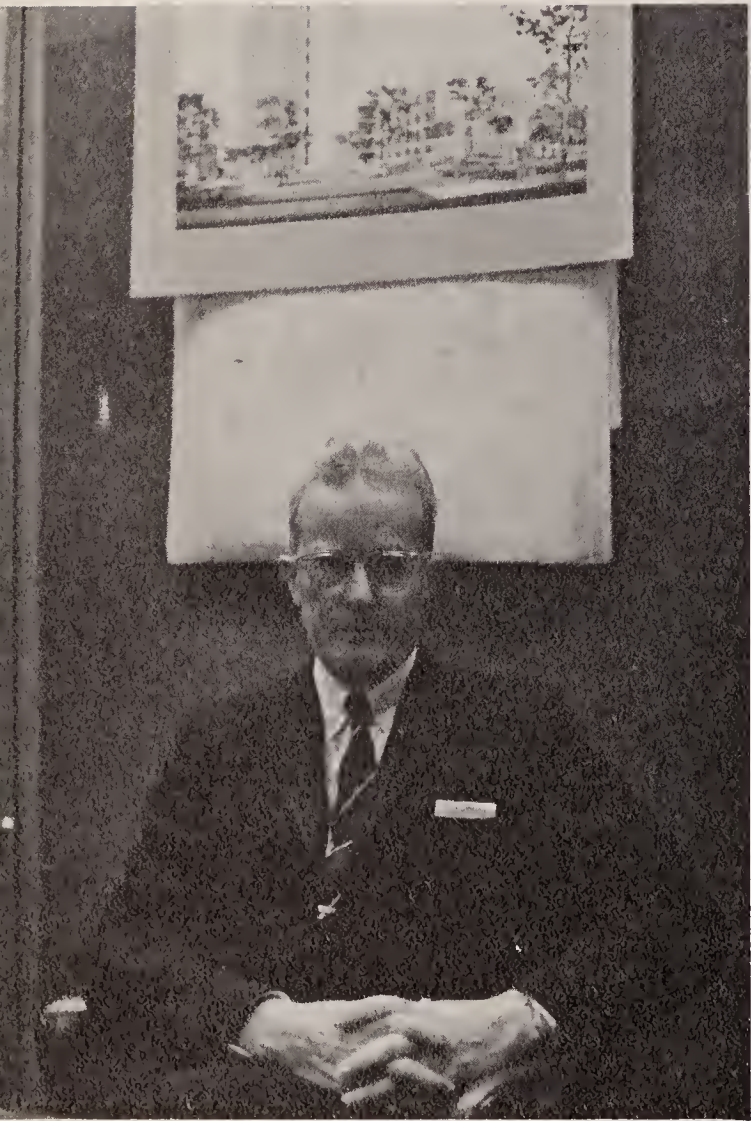
... Getting organized ...

... Still organizing ...



ADMINISTRATION

"Progress comes when man stops praying or legislating change, and starts looking around."
Mr. William Claff



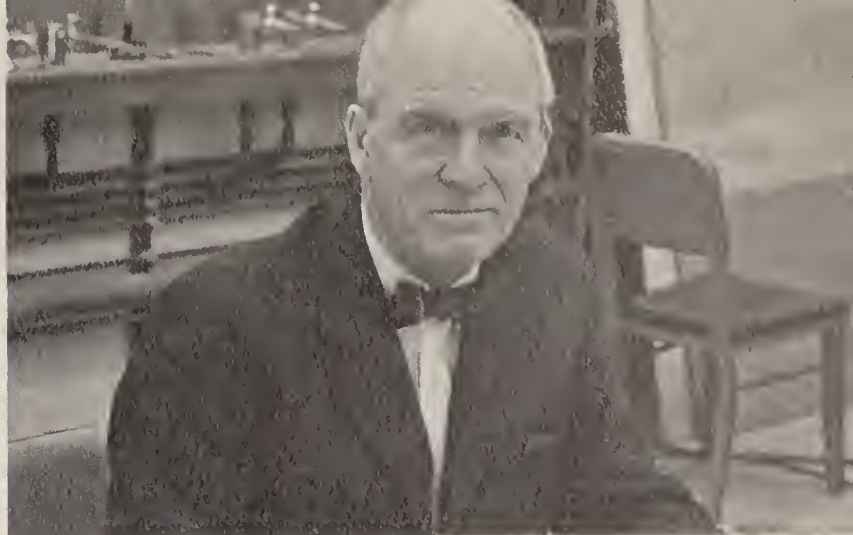
JOHN CRAYTON SNYDER
A.B., M.D., LL.D.
Dean

JAMES LAVERRE WHITTENBERGER
S.B., M.D., A.M., (hon.)
Assistant Dean





Smith, Kline, and French—
Philadelphia Museum of Art



WILLIAM HATHAWAY FORBES
A.B., A.M., Dr.Phil., M.D.

*Assistant to the Dean and Faculty
Advisor for Foreign Students*



RICHARD HENRY DAGGY
S.B., S.M., Ph.D., M.P.H., Dr.P.H.

Assistant Dean for International Programs

Front row—Judith Godden, Agnes Murphy, Eileen Thibodeau, Beverly Laskey, Eileen Lynch, Betty Stephens. Second row—Margaret Penrose, Ruth Faulkner, Pamela Burden, Margaret Barnaby, Cynthia Randlett, Judith Grossman. Back row—Gail Stocker, William Claff, John C. Snyder, James Whittenberger, Richard Daggy.



HUMAN COMMUNITY

What I would like to see

One heartening manifestation of the growing acceptance of the behavioral sciences among public health professionals is that social scientists are called upon less and less to justify themselves. The social sciences are in public health to stay as long as work in this field involves understanding and influencing individual, group and community behavior. It is not an exaggeration to say that much of public health is, in fact, applied social science.

The growing collaboration between the two broad disciplines of public health and social science is salutary. I would like to see the profession progress even more and foster the development of a substantial number of public health workers who have training in the behavioral sciences equivalent to that of Ph.D.'s in sociology, social psychology or anthropology. Obviously, the present curriculum of this School is not sufficient nor is it intended for that purpose. It is time to consider a combined degree in Social Science and Public Health for which both social scientists and public health professionals would be eligible. Our new Department of Behavioral Sciences would be in an excellent position to assume leadership in this area.

Although there would be a number of merits in developing this new breed of public health specialist/social scientist, there is one special contribution which I would hope this new professional could make. As one who would possess social science acumen and understanding and still be a public health "insider," the new professional, hopefully, would be in a strategic position to in-

fluence his professional colleagues and the organizations in which they serve. And this I deem to be especially important since I believe that the habits and culture of professionals and the needs and practices of organizations are often the major impediments to the realization of public health goals. As an "activist" society, we tend to view with approval people who are active or are doing things. Even more we often tend to blur activity with doing good. But it is one thing for a profession to be practicing its skills and another thing for the profession to be doing "good" in helping to achieve larger public health goals. Professionals often tend to approach or define problems in terms of how they can best employ their own skills, and are less receptive to other skills and approaches which may be alien to them, but which in reality may be more relevant and effective. How else, in view of the acknowledged shortage of qualified personnel, can we explain the failure of professionals to work aggressively for the massive deployment of auxiliaries and indigenous workers in a whole range of public health programs? Why did such simple but innovational approaches to alcoholics and drug addicts—Alcoholics Anonymous and Synanon—develop outside and, in fact, remain outside of the public health profession?

The literature is replete with examples of organizations which deviate from their original goals and how major decisions are made in terms of professional convenience and organizational needs, instead of the needs and requirements of the original target population. The public health professional I would like to see developed is one who is steeped in the sociology of the professions and in organizational sociology, who is equipped to recognize and question some of the most fundamental habits and modes of thinking of professionals and who has the skill and imagination to work towards achieving congruity between organizational needs and practices and those of the population requiring help.

SOL LEVINE



SOL LEVINE, A.B., A.M., Ph.D.

...If you see a pin...

The need for health professionals to know their community?—you'd better believe it.

When I started out in practice, I learned firsthand of the conflicts between rationalistic medicine and the deeply-rooted mysticism of a small rural community in northwest Maine. I was introduced to the problems of the community health by experiences such as I am going to tell you about . . .

One of my first good cases was a young man with a severe laceration of his hand. After I had sutured the wound, he looked up and said "Gee, Doc, it's a good thing I saw the healer. That was a bad cut." Astonished, I questioned him further and found out that there were two healers in the town (seventh sons of seventh sons) who could stop bleeding at will. They also treated nervous conditions, abdominal cramps and chronic headaches. I didn't pursue the matter further at that time but a little later I was called to see a young girl in coma from what turned out to be a subarachnoid hemorrhage. Her father advised me that she had been having headaches off and on for the previous week but that they had been relieved by the healer. After an ambulance trip of 120 miles and the tying off of her aneurysm, she recovered, luckily with no residual paralysis. Following this, I visited the healer for a personal talk but didn't get anywhere. I was more than a little chagrined to find out he was a relative of mine.

It didn't take me long to find out that the town not only had its indigenous healers but also had its indigenous standardized therapies for disease: the "turpentine strips," "molasses enemas," "tarred ropes," "copper bracelets," and "nanny goat tea" were all a part of the kitchen closet. My pay was also often set by standards different from what I was accustomed to. The treatment for pneumonia would bring 5 lbs. of deer or moose meat. A gall bladder operation was worth 5 gallons of mountain dew which I couldn't drink but which I found would keep the chemical toilet at my camp from freezing down to 30° below zero.

The concept of spiritualism and the spirit world was way beyond my comprehension. The only problem was that all my relatives believed, and I would have to turn to my wife for consultation on complicated cases . . .

NILES PERKINS



The point I want to make is that indigenous medicine isn't confined to India and Africa. It is all around Boston and probably exists within less than a block of our school.

. . . Medicine without an understanding of folk ways is an empty technical shell. And by the way, if you see a pin . . . pick it up and all the day you'll have good luck.

NILES PERKINS

TO DR. LEVINE

October

You say morale will take a dip,
And be low in November,
Then after that will rise again,
Our trials we'll not remember!

November

You now observe morale will drop,
But that we should not fear,
For spirits once again will soar
Just after the New Year!

January

Again you tell us to cheer up.
We really shouldn't sigh,
For 'though we feel down in the dumps
In March we will feel high!

March

Again in March we may expect
You'll say we'll smile quite soon,
That even though things now look dark
All will be bright in June!

June

And when June comes; the race is o'er;
We hope we will feel bright.
That on that day, in Cap and Gown
We'll say, "Doctor Levine, You're right!"

ROBERT GLOOR

Seated—Roberta Idelson, Dorothy Bowden, Pamela Sisson, Thelma Shapiro, Alberta Lipson. *Standing*—Sol Levine, Sydney Croog, Lenin A. Baler, Norman Scotch.





RICHARD HENRY DAGGY
S.B., S.M., Ph.D., M.P.H., Dr.P.H.

PUBLIC HEALTH PRACTICE

Two decades hence public health will be concerned with the delivery of comprehensive health services to both individuals and communities. New patterns of organizing and administering these services will be required, resulting in some communities in hospital-based preventive programs complementing the diagnostic, therapeutic and rehabilitative functions of the hospital. In other communities, multi-service centers will be developed in which welfare, mental health, rehabilitation, veterans, social service, and public health needs will be coordinated under one roof.

Government—local, state, and federal—will be an active participant not only, as of now, in the funding of research and training programs, but also in the actual provision of all types of health and medical care services. Government controls will be exercised through the setting of minimal qualitative and quantitative standards for both personnel and facilities.

The existing critical health manpower shortages will be relieved through the shortening of the required training periods for physicians and dentists; through redefining the roles of all essential professional personnel; and through the concomitant

creation of a number of new health auxiliaries to carry out routine and technical skills formerly considered to be professional responsibilities.

As professional and technical specialization increases, care will become more scientific and more impersonal. This trend will be counter-balanced by an increased emphasis on personal health counseling and education focused primarily on the prevention of major disabling conditions: chiefly heart disease, cancer, stroke, accidents, and arthritis.

Research on the molecular level will be de-emphasized in favor of more analytic studies of the psychosocial, cultural, and organizational factors affecting the delivery and utilization of health services. The lag between research discoveries and their incorporation into service programs will be reduced by such innovations as:

- built-in continuing education of all professional and auxiliary personnel as an integral function of agency program planning and evaluation; and
- use of computer techniques and operations research methods to assess continually the efficiency and effectiveness of the health agency: its goals, its structure, and its functions vis-a-vis the changing needs of its consumers.

RICHARD H. DAGGY
ARTHUR R. JACOBS
MARJORIE A. C. YOUNG

...*Boston Could Tell Us...*

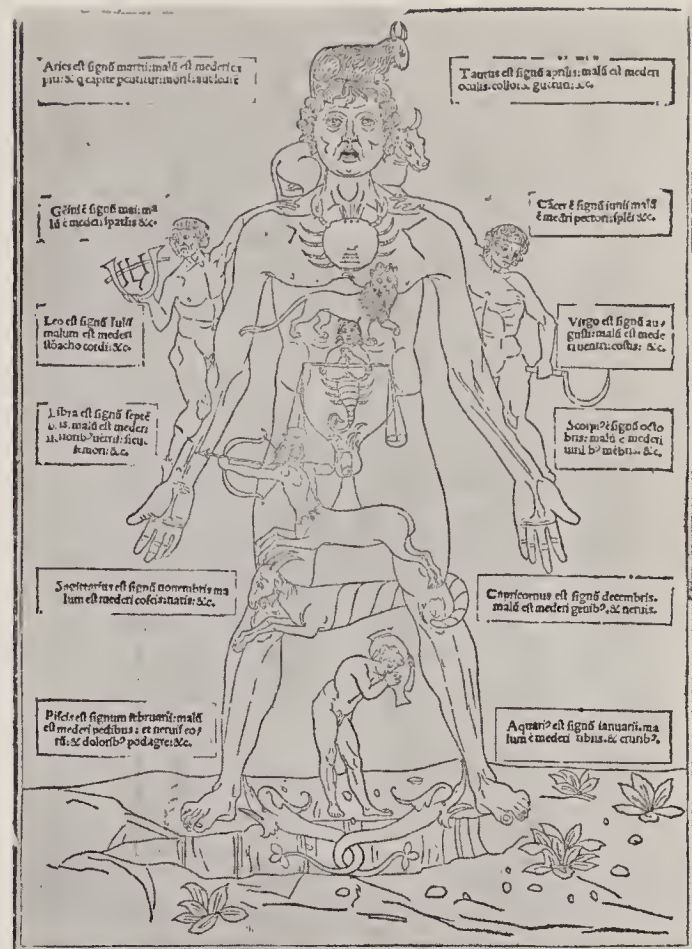
"One of mankind's greatest challenges is to make available to world society its immense technological knowledge. Unless man has institutions and techniques through which scientific knowledge can be applied to society's benefit, the knowledge itself is limited in its effect. The role of the Department of Public Health Practice is to add to our understanding of and to strengthen these institutions and techniques and to train the policymakers and administrators who will serve the field of public health throughout the world. Public health administration is a multidisciplinary art and science."

—*Catalogue*, School of Public Health 1965-66

The gap between the description and reality always exists. How to teach a multi-disciplinary art with the limited budget and personnel of a single academic department is a very real problem.

How should the time allotted for the teaching of public health best be put to use: with lectures? seminars? field experience? research?—or something more adventurous and experimental? Does programmed instruction fit into future plans?

Perhaps the teaching machine will teach the class of '75 about cost analysis. But the delivery of medical services here and everywhere will depend on the mastery of political techniques—the hard sell, the ability to bargain, the sense of timing, the instinct for action. Should all this be taught at a school of public health? *Can* this all be taught?



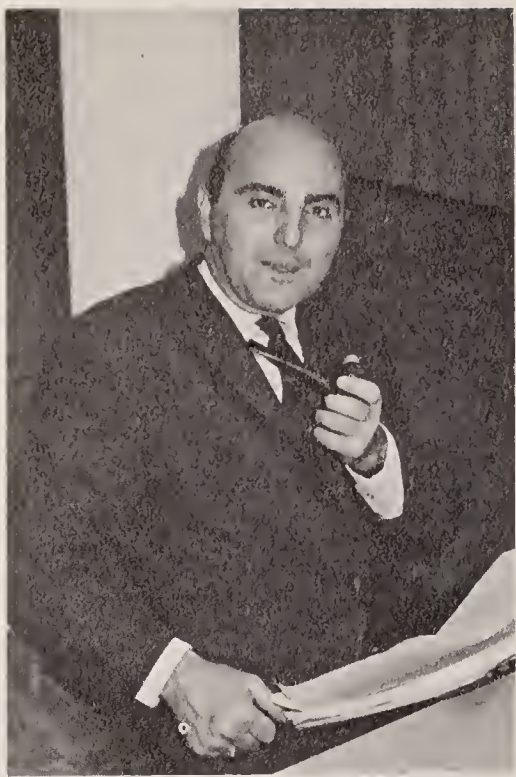
Comprehensive Medical Care

Smith, Kline, and French—
Philadelphia Museum of Art

How are private, public, and academic sectors to be coordinated? How much *should* they be coordinated?

Roy Penchansky, Marjorie A. C. Young, Lenin A. Baler, Arthur Jacobs, Richard Daggy, Norman Scotch, Gerald Renthal, Sol Levine.





Perhaps some workable answers to these questions would come from experimentation and research in metropolitan Boston. Boston could tell us. Its challenges to public health are many: a serious tuberculosis problem, the decay of a city hospital, budget and personnel problems. A step in the right direction for public health in Boston was the plan worked up by the School of Public Health for the re-organization and merger of the city's Departments of Health and Hospitals. Now the School's job is to see that the plan is used and that some good comes from it. Other problems must be attacked: urban renewal, programs for the poor, obstetrical "high-risk" care, regional planning of hospital services.

Students from this country and abroad need to sharpen their sense of community action. Schools of public health should lead the way.

As he tested, he
diesel engine
orning." Asked
Asks were lost
"I couldn't see
fleshless in the
pital and all work
some were so old we had to
throw them away."

BOSTON SUNDAY HERALD

Invite Budget Head To City Hospital

...the means further the Traveler has learned, the William H. Miller Jr. note
the disconnected the official budget re

Crisis a Chronic Disease Viewpoint
In Boston City Hospital
By ROBERT A. KENNY **City Hospital Budget Cuts May Be the Unkindest**

[illegible]

Boston to Pare Hospital Fund

By _____

Extraordinary role
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and Hospital
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reorganized,
Major Cal

to meet the accreditation
by DeLatt with suc-
cess. Report and the re-
sults of the fund-raising
is the hope of the future.
DeLatt's surveys of nursing
service underway now were
by DeLatt.
new trustees appointed by the
is named with the advice and
DeLatt.
special consultants seat-
ing the hospital on a voluntary
basis and report

PERSONNEL

Year	Regular employees including nurses	Physicians	
'61	2421	470	\$19,000
'62	2503	493	\$21,000
'63	2561	499	\$22,000
'64	2539	524	\$23,000
'65	2564	534	\$24,000

(Figures provided by BCHI audit dept.)

tion carries with it a por-
tion of others at the

Health Dept. Called Vital

City Hospital, Boston

With medicine a constant increase in the cost of hospital care, the patient's financial burden is growing. The general Hospital, each year, the patient's financial burden is growing. The general Hospital, each year, the patient's financial burden is growing.

Was City Hospital Dark or Wasn't It?

By CARL M. COBB
CAPL M. COBB

...all between themselves seek a change of status if they want to put Foley head of the hospital on the responsibility on the court.

...known to oppose the plan. A second hearing will be held at the City Hospital on 10 days.

...cost emphasis and a new plan people on a

Costs Offset

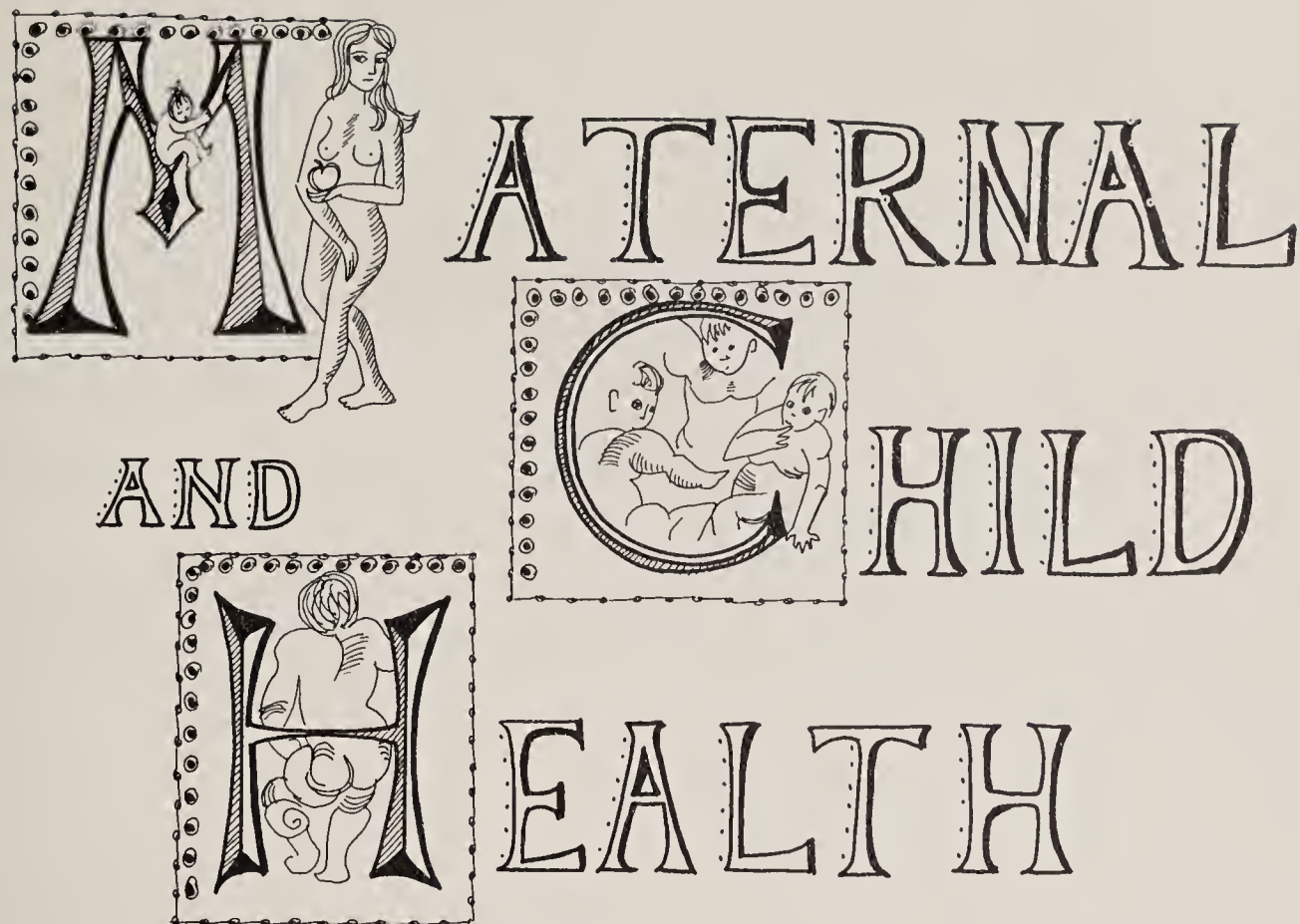
...Payroll in the

[illegible][illegible][illegible]

Dr. Leon Lear, deputy commissioner for hospital services, announced that the \$100,000 hospital has received to be used in support of research projects. This brings to \$28,843 the total research grants awarded to the hospital in less than one year.

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MATERNAL AND CHILD HEALTH

Are there enough personnel...?

The following conversation between Dr. William M. Schmidt and Dr. William M. Moore was recently overheard by the editors of the year-book.

Moore: What should people in Maternal and Child Health (MCH) in the United States be aiming for in the next decade?

Schmidt: You recall that three major goals were formulated in a 1962 conference on Professional Education for Maternal and Child Health: 1) the reduction of maternal mortality rate to 1/10,000 live births (it is now 3.7/10,000), 2) the reduction of perinatal mortality rates to below 20/1000 births (it is now 33.3/1000), and 3) the habilitation or rehabilitation of children with handicapping conditions.

Moore: Wouldn't you agree that high calibre comprehensive family-centered preventive and curative health services must be made available to everyone throughout the nation? In addition to meeting purely physical needs, emotional and social problems must be dealt with and all of this will require considerable imagination and effort.

Schmidt: I suppose no one would disagree, but are there enough personnel?

Moore: Presently there are insufficient numbers of trained personnel in virtually all the categories of work having to do with MCH. This is compounded by the trend of increasing specialization and maldistribution. More people must be trained to meet the needs of a growing population. Great emphasis should be placed on improved distribution of personnel and facilities, increased efficiency in the delivery of services, and the utilization of auxiliary personnel.

Schmidt: Well, I do not think there are enough personnel if we continue to practice the way we have in the past. Different methods of organization are being studied and will be tested in action.

Moore: What changes in the format of administration and delivery of MCH services seem desirable in the next decade?

Schmidt: In moving toward greater availability of professional and technical resources where and when they are needed, eligibility restrictions such as means tests, residency requirements, and other limitations will have to become things of the past.



Back Row—Olivia Brum, Myra Lichtman, Ann F. Weisman, Phyllis Paskauskas, Gertrude McCarthy, Rachel Papo, Leon Sternfeld, Michiko Tomita, Peggy M. Maloney, Anthony J. Zangara, Carmina M. Gordon, Sheila Rockoff, F. Joan Crichton, James E. Teele, Joan C. White, Bonnie J. Walling, Margaret B. Hoff. *Front Row*—Ruth A. Cowan, Miriam C. Ekdahl, Elizabeth P. Rice, William M. Schmidt, Isabelle Valadian, Helen Mitchell, Ruth Landfield, Ruth M. Butler, Sharon Soper.

Do you see any differences in MCH goals between the United States and other countries?

Moore: Goals for MCH may not be identical, but should be similar from one country to another. Undoubtedly there will be a time difference in the attainment of these goals. The schedule for the industrialized countries will be more advanced than ones for developing nations. Strong leadership must come from the countries with abundant resources while the others will have to be careful not to adopt inapplicable or inefficient techniques.

Schmidt: No group of countries has a monopoly of leadership, and I believe all societies place a high value on the health and welfare of mothers and

children. Governments are showing increasing recognition of the problem of inadequacies of health and social services and are expanding their efforts to cope with it. Expansion of MCH services, including family planning, will take place with the assistance of international agencies and bilateral aid.

Moore: MCH personnel and those of us entering the profession were pleased to see UNICEF receive the Nobel Peace Prize for service to the children of the world. This should be viewed not only as an award for past achievement, but as a challenge for future progress in providing for material needs and promoting international understanding.

We can't continue like this.



Smith, Kline, and French—
Philadelphia Museum of Art

The Vaccination—Leopold Mendez



Smith, Kline, and French—
Philadelphia Museum of Art

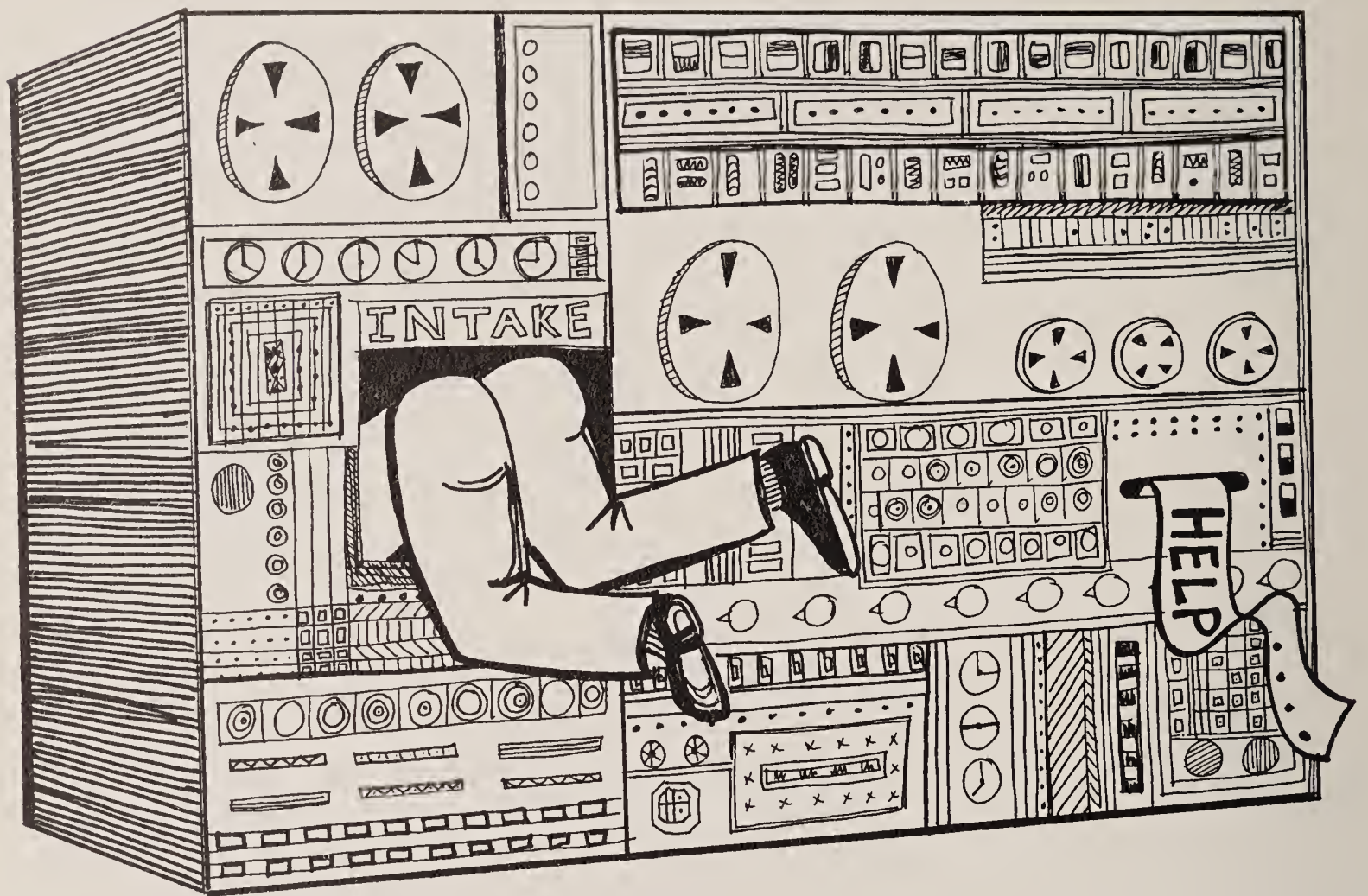
WILLIAM MORRIS SCHMIDT, S.B., M.D., A.M.
(hon.)



"... Societies place a high value ..."

WHO





Seated—Margaret Drolette, Mary Nolan, Sheila Foley, Linda Parrish, Carol Leonard, Mary New, Claire Wasserboehr. *Standing*—C. Ralph Buncher, Jacob Feldman, Robert B. Reed, James O'Connell, Lee Slocum, Raymond Neff, Joseph Green, Jane Worcester.

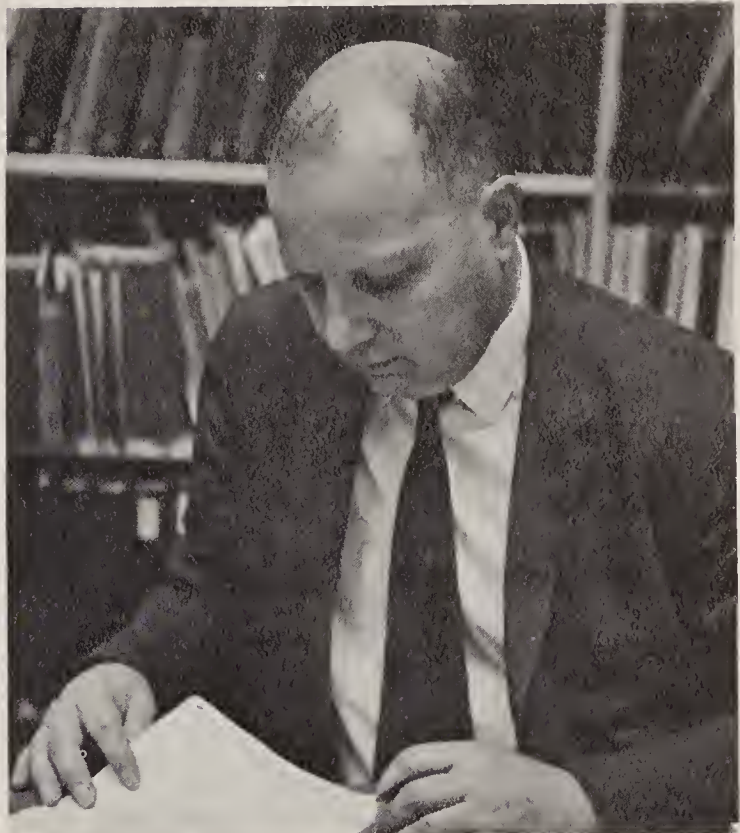


BIOSCAULSTATICS

Some of the more interesting definitions of statistics emphasize the process of making decisions in the presence of uncertainty. A statistician is, therefore, encouraged by the commonly observed phenomenon that the answering of one question in either basic or applied science seems to lead inevitably to the asking of several new questions. This hydra-headed monster is the biostatistician's friend. There is no need to worry about exhausting the world's supply of uncertainty.

The most urgent decisions to be faced by Public Health during the next few decades will arise out of the increasing size and mobility of human populations combined with the increasing aspirations and potentials for the promotion of health throughout the world. Challenges for biostatistics will continuously arise in terms of demands for more comprehensive and more complex techniques for analyzing the data on which these decisions must be based.

But time and again, it appears that the uncertainty in public health decisions does not come from a lack of analytic techniques. It arises from the lack of adequate and available observations to form a basis for decision. Current advances in the technology of data collection, transmission, storage



ROBERT B. REED, A.B., A.M., Ph.D., A.M. (hon.)

and retrieval make it possible to think of obtaining these observations with the requisite speed, comprehensiveness and accuracy. Translating this possibility into a reality should be one of the most exciting developments in the future of public health.

ROBERT REED

Margaret Drolette preparing another lucid lecture.



Dr. Sharratt attacking p and q

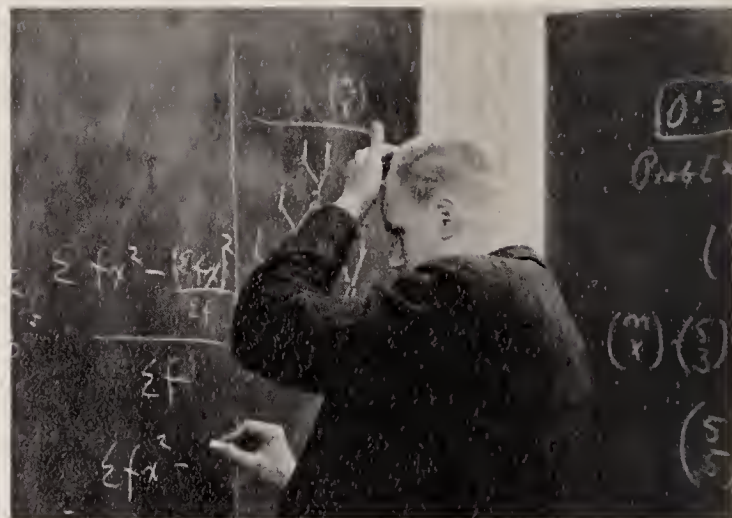


...A Constitutional Stroll

Biostatistics has arrived! One of its members, significance testing, has been added to the list of necessities. Everyone talks about significance, the journals insist on it and even doctors are taught tests of it. Every observation is soon challenged by the question, "Are you significant?" The only dissenters are the extremely cautious who insist that a real difference must be obvious without a test, an argument that accepts the basic skepticism of significance testing although it rejects the techniques.

Acceptance has been accompanied by excessive enthusiasm and significance tests have appeared where they never ought to have. The null hypothesis that could not be rejected has been offered as proof of equivalence. Elsewhere significance tests have been taken too literally by the gullible who regard them as essential distillates, while the substance of the data is relegated to "insignificance." Moreover, respectability imposed a canon of propriety. Editorial policy in some cases has rigidly prescribed a familiar format rather than one tailored to the needs of the problem and thereby robbed the techniques of their versatility. Regardless of these imperfections, the utility of analysis of data according to mathematical models has been demonstrated.

With computers as draft animals, biostatistics can turn to the revival of relative likelihood arguments, the development of non-parametric methods and, possibly, enjoyment of the fruits of multi-

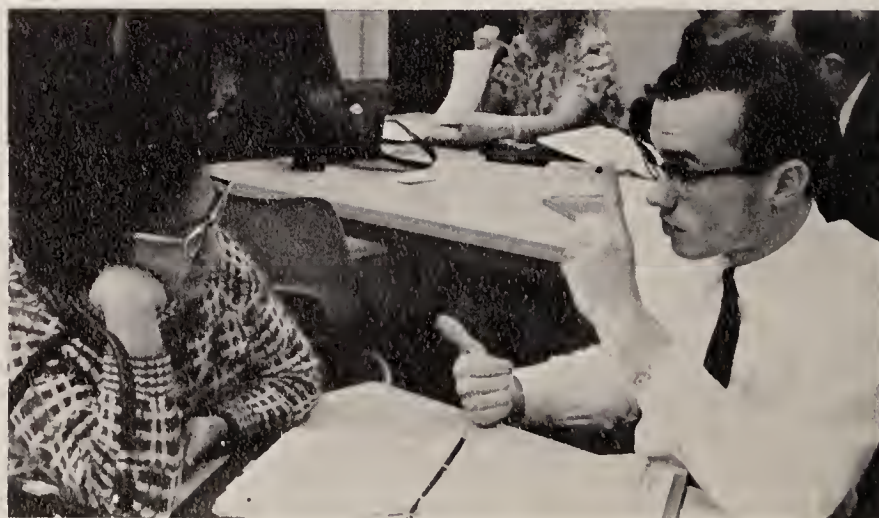


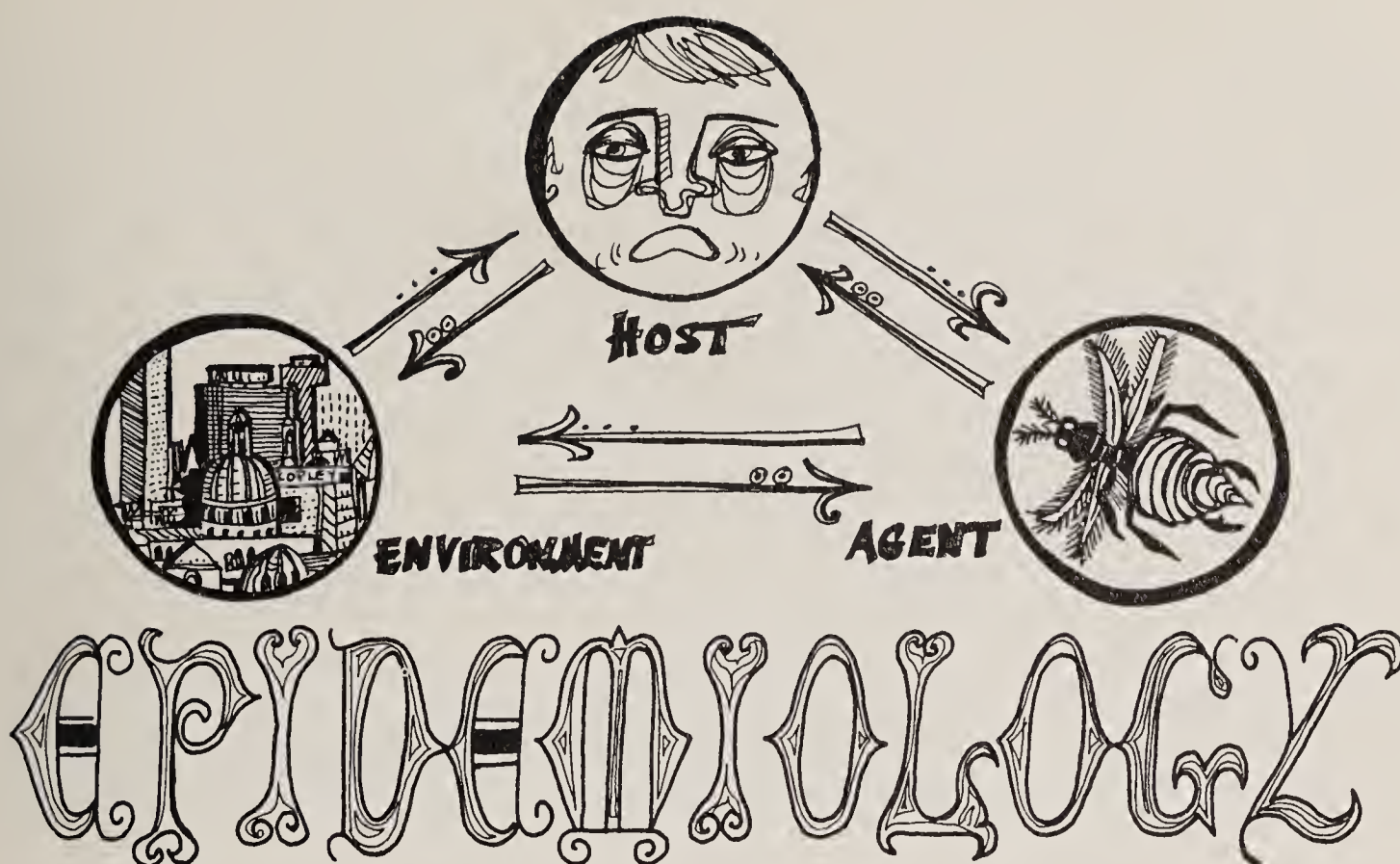
David Heer solving a problem.

variate analysis. Will these find their way into Biostatistics lab in the years to come? My guess is probably not. At least not in the sense that σ , μ , t and p or q are found there today. As techniques of analysis become more varied and more demanding on the user, it becomes less and less justified to present a survey of their rudiments. Putting the t -test in the hands of everyone did not eliminate illogical or otherwise improper comparisons; rather it permitted these errors to be dressed up. The inclusion of new techniques would only enlarge the wardrobe. Statistics is not for everyone, but logical observation is. Therefore the biostatistics course of the future may not be very different from the present one. The emphasis will still be on approach rather than techniques, but it will continue to be coupled with a constitutional stroll through a significance test.

JAMES WARRAM

James Warram explaining a problem.





...Infiltration of the medical curriculum...

With respect to subject matter, the following are responses to the Yearbook editors' question—"What would you like your field to accomplish in the next decade or two?":

1. Clarification of the roles of exercise, diet and heredity and their inter-relationship in the etiology of coronary heart disease.
2. Elucidation of the etiology of the common malignant neoplasms of the digestive tract and reproductive organs, and, in particular, understanding of the reasons for the remarkable international variation in rates of these disorders.
3. Explanation of the racial and international differences in prevalence of hypertension and cerebro-vascular accidents.
4. Development of operational diagnostic definitions of mental illness that lend themselves to analytic epidemiologic investigation.
5. Identification of other microbiologic, chemical and physical agents associated with fetal mal-development.

Methodologically, the greatest need seems to be the improvement of data collection procedures—the automation of data retrieval from vital and other medical records, development of the technology of record linkage (family and individual), and improvement of the facilities for long-term follow-up studies.

Administratively, I would like to see continued infiltration of the medical curriculum and of clinical practice so that the insights of the clinician and the technology of the epidemiologist can be brought to bear simultaneously on problems of common concern.

BRIAN MACMAHON

BRIAN MACMAHON, M.D., Ph.D., D.P.H., S.M.
in Hyg.



... The relevant variables...

Two years of experience in the control of tuberculosis has directed my attention to the widening gap between the development of epidemiologic knowledge and its employment to yield health benefit. Responsibility for the formulation and execution of control programs *usually* lies outside the province of epidemiology. But, I believe, epidemiologists of the future may play a useful role in the transformation of new knowledge into more effective methods of control.

The formulation of effective methods will require the participation of various professionals—administrators, sociologists, economists, and epidemiologists. To resolve a particular problem, these professionals will need to develop and share a common language, a language which describes the interactions of the total system under study. Relevant variables will include factors such as patients' preferences and community resources in addition to time-honored age, sex, and occupation. Hence, those epidemiologists who participate in the formulation of strategies for disease control will find useful a broad conceptual framework that will accommodate these many variables. Thus far, this framework has not been developed.

I believe that within the next two decades men will begin to use systematically a science of values, that is, an empirically-determined system of weighing preferences for alternative acts. Epidemiologists who participate in developing strategies for disease control may find knowledge of this science of values useful. There will be a need for a new kind of epidemiology, one that deals with problems of synthesis as well as those of analysis.

FREDERIC BASS



FREDERIC BASS

... You get down to basic considerations...

On January 12th, Dr. John E. Gordon, Professor Emeritus of Preventive Medicine and Epidemiology at the Harvard School of Public Health, spoke informally about a lifetime of work in epidemiology. Excerpts from his talk are printed below.

We speak oftentimes of the epidemiologic method. I don't know much about what the epidemiologic method is. It has no particular individuality. I think it is nothing but the scientific method turned to a special purpose: the study of disease and injury in groups of people in its natural environment. It is based, like scientific method in general, on Baconian principles as they were refined by Claude Bernard, and little else. What it is, of course, is the attempt to develop a sophisticated understanding of disease under a variety of conditions. But it is more than geographic pathology . . . It is more than provincialism in approach to disease, based so many times on the idea that most great secrets about disease are found in modern metropolitan cities.

I have a great liking—I have for all my life—for the study of disease in rural populations. I like particularly the studies we made in the Arctic because the flora is simple, the fauna is simple, and the people are simple. You get down to basic considerations. I also believe that a goodly part of the advantage of epidemiology is in the fact that there is a futility to studying the behavior of man in



Seated—Eva Salber, Kathleen Shreeve, Maureen Molloy. *Standing*—Ascher Segall, Theodor Abelin, Brian MacMahon, George Hutchison, Manning Feinleib, Thomas Pugh.

health or disease without a consideration of the environment in which he operates, whether that be biological or physical or social environment . . . Of course, one of the fascinating things about studying disease under the various conditions it occurs is serendipity . . . We had spent several months studying an epidemic of measles. And there was this August morning, a goodly reason for a certain amount of scientific satisfaction. We were interested in diarrheal diseases and found that it was an important contribution to a death rate from measles which, in this village, amounted to better than eight per cent compared with the minor fraction to which one is accustomed in Boston, for example. Also, I had a certain amount of satisfaction because we had been working on a procedure which I had long practiced. Namely, that if one really wants to know about health in an underdeveloped country, there is one pretty sure way to find out and that's to go into medical history and look into what happened in the present-day developed countries a hundred years ago. . .

JOHN E. GORDON

After the epidemiology exam.



Museum of Fine Arts, Boston

MICROBIOLOGY



Smith, Kline, and French—
Philadelphia Museum of Art

...The surface has been scratched...

In the next decade the School plans to broaden the Department of Microbiology both in its teaching and research, to include new programs in investigation of microbiologic factors in the etiology of infant mortality, congenital malformations, cancer, mental illness and other degenerative diseases characteristic of aging. The Department will be an integral part of the Center for Prevention of Infectious Disease under the Directorship of Dr. Thomas H. Weller. Some of the reasons for the emphasis on infectious disease are indicated by the following excerpts from the Delta Omega address:

"Infectious agents have become prime suspects among possible causes of several serious diseases

previously assumed to be non-infectious, diseases of major public health importance in the highly industrialized nations. That certain forms of cancer, mental illness and diseases of old age may prove to be preventable has been under-scored by recent discoveries. One can cite evidence such as the simian virus which can alter human cells in tissue culture and produce neoplasms in animals, the role of the cytomegaloviruses in causing mental retardation, and the fatty degeneration induced by the lipovirus in human cells in continuous culture . . . the surface has been scratched, but new vistas of knowledge await the skilled scientists who are investigating the role of infectious agents in the chronic, degenerative, and neoplastic diseases of man.

"Emphasis on infectious diseases has other justifications. The public pronouncements by eminent people to the effect that infectious diseases have been conquered are, unfortunately, quite inaccurate and misleading. The process of evolution has not stopped. The generation times of microorganisms are measured in minutes not in decades. The rapid emergence of genetically altered drug-resistant strains of microbial pathogens and of pesticide-resistant disease-transmitting arthropods can be cited to illustrate this important point. More than one hundred viruses hitherto unknown have been recognized in the past few years as pathogenic for man. Furthermore, the Cleveland family study strikingly emphasizes the importance of infectious disease in technologically advanced urban societies today. . . . Infectious disease accounted for more than half of the considerable amount of illness that took place in this cross section of American city dwellers receiving medical care of high quality by contemporary standards . . .

"A further reason for renewing the emphasis on prevention of infectious diseases lies in the fact that as a consequence of the flood of new knowledge, the responsibility for preparing skilled people in this field is shifting from the professional schools of medicine, veterinary medicine and nursing to the graduate schools of public health. While students in the basic courses of the professional schools are being familiarized with more and more of the newer subjects such as molecular biology and biophysics, they are receiving less and less instruction in diagnosis, treatment and prevention of infectious diseases. Our nation must increasingly depend on its schools of public health to provide the post-graduate instruction to physicians and other members of the health professions so that they will acquire a thorough understanding of infectious disease in man and will be able to deal intelligently with community and national programs for reducing this major cause of human suffering, disability and death."

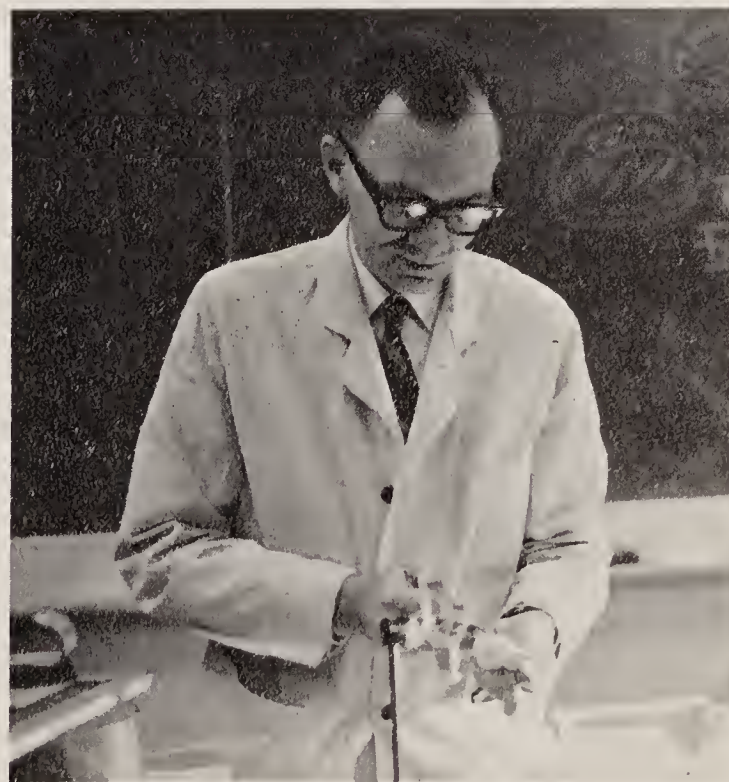
JOHN C. SNYDER

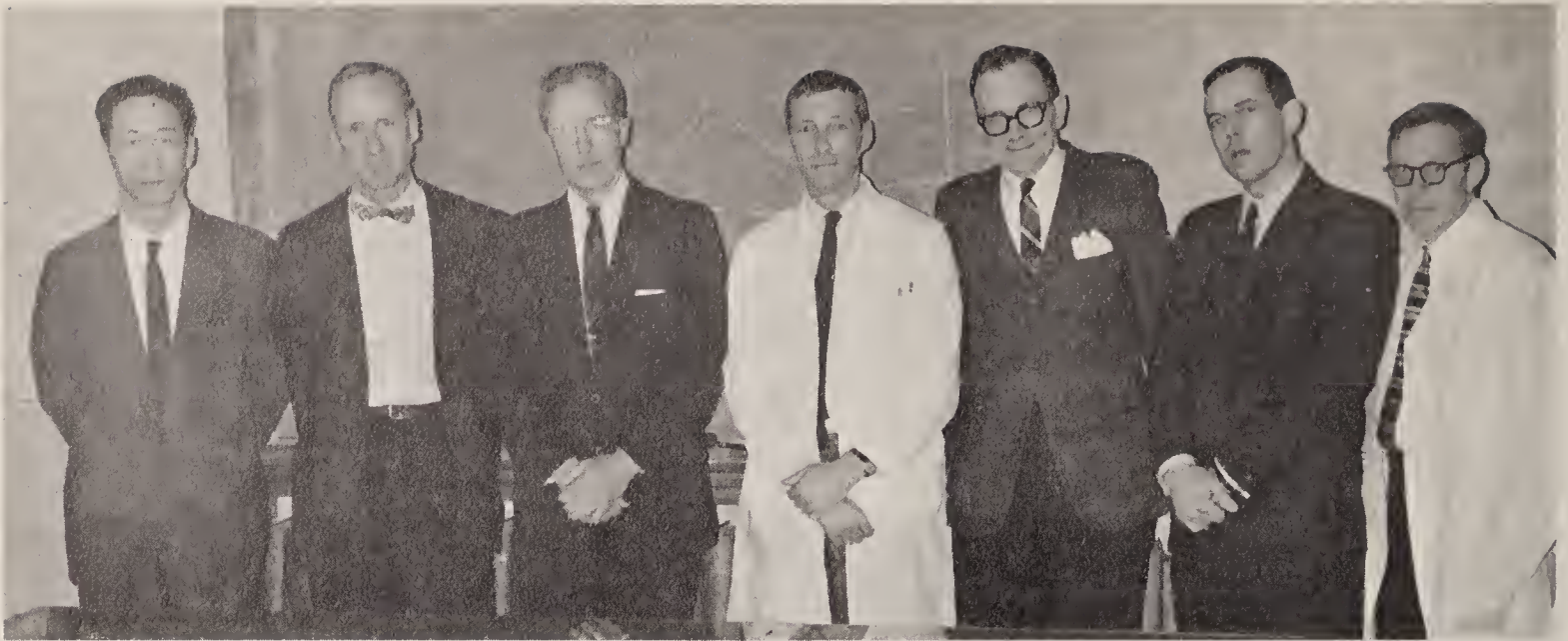
The Education of Health Experts for the 1970's by John C. Snyder, M.D., LL.D., F.A.P.H.A. American Journal of Public Health, Part II, Vol. 56, Number 1, 67-73, January 1966.



JOHN C. SNYDER, A.B., M.D., LL.D.

Dr. Herbert Ley and friend





Robert Chang, Edward Murray, John Snyder, William Vinson, Herbert Ley, John Peters, and Samuel Bell.

...What is the next horizon...?

The prediction made in 1965 that infectious diseases would retain their importance has rung true. It is now 1975. Having demonstrated the viral etiology of leukemia and developed a specific vaccine the old question of cost-benefit has arisen. Will the cost of vaccination be worth the benefit achieved? This question can be faced with some assurance now that five years of experience with broad spectrum vaccines against the common enteric and respiratory viruses is behind us. The concept of geographical vaccination is well established. For instance, this year the 200 members of the 1976 class of the school of Public Health each received sufficient "Boston Mix" vaccine for themselves and families in the summer. They arrive here protected from faculty and employees. An attempt is being made to determine wild (that is non-Boston) strains they carry in order to protect the faculty from them.

The School of Public Health has now been using its new building for five years. The place of the Microbiology department has been permanently established. No one enters the building without an awareness of this importance. This stems from an event in 1971 which occurred during the trial of vaccines against one of the so-called "atypical" mycobacteria. A large aerosol of viable organisms was inadvertently exhausted into the recirculating heating-cooling system. Despite every effort to filter



W. PAUL REAGAN

them out or kill them with ultra-violet a few of these hardy organisms still persist. Therefore no one can enter the building without specific chemotherapy or prior vaccination using the new non-cellular hypersensitivity transfer antigen.

So it goes. Although man has reached the moon and looks beyond he is still constrained by the tiniest of organisms here at home. What is the next horizon? There is some evidence that the homely amoeba produces a substance protecting arteries from the aging process. Who can predict the future anyway?

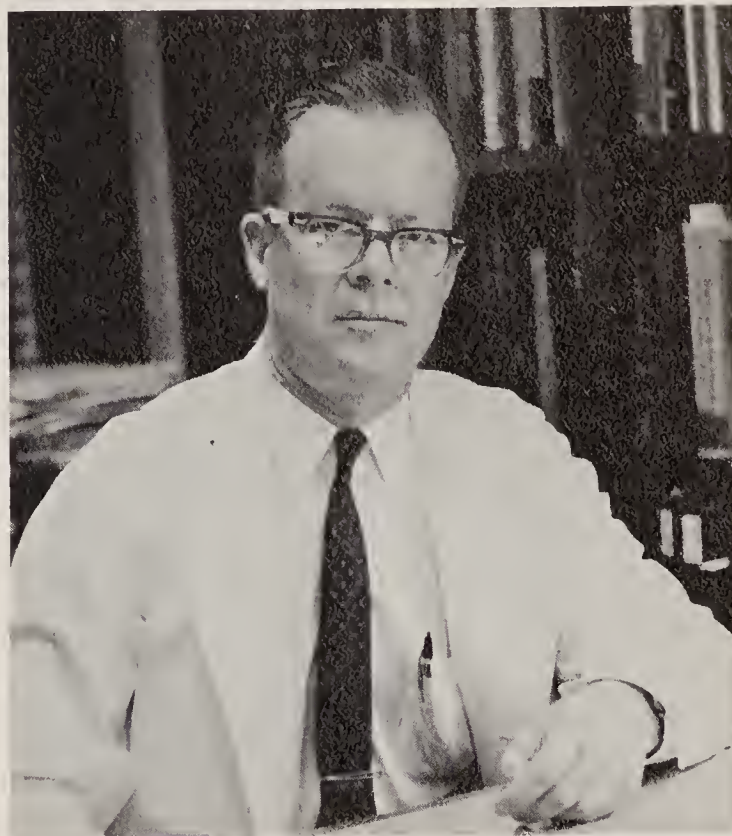
W. PAUL REAGAN

TROPICAL PUBLIC HEALTH

...The Image of "Prevention"...

The major challenge for the worker in public health in the next decade is to crystallize the image of "prevention" and by so doing to compel the reasoned acceptance of public health as an integral component of programs designed to better the welfare of man. That health often is not recognized as an essential component in economic and social development must in part be attributed to the failure of the health professions to provide a dynamic and informative leadership. While the curative image is sharply defined, that of prevention remains a nebulous concept in comparison. A visionary leadership in the health field, possessing multidisciplinary human ecology, will, by logic, and deeds, channel a major proportion of limited health resources into preventive services.

The time is particularly propitious for the assumption of leadership. In the affluent as well as in the developing areas of the world, good health is ever more regarded as an inherent right of each citizen. Natural aspirations in the health field are in receipt of increasing political and financial support. Plans and programs—or schemes, in the British terminology—appear in profusion and are funded with more enthusiasm than critical assessment. Consciously or subconsciously, society, like a Ponce de Leon, seeks the objective so aptly labelled by Rene Dubos as "the mirage of health." The professional worker in the health field appreciates that



THOMAS H. WELLER, A.B., S.M., M.D., LL.D.

man, a biological entity, will be ever plagued with the problem of disease as modified by a constantly changing human ecology. The health professional must direct the social forces that are groping for the unrealistic goal of total health, into realistic channels that will permit the maximum improvement in the general health status of the society of man. Further, he must selectively seek new knowledge pertinent to the solution of the changing problems of human health.

Political support for health can be expected to increase. Your challenge in the next decade, therefore, is to provide the leadership that will crystallize the image of "prevention," so that public health will become an accepted component of programs designed to better the welfare of man.

THOMAS H. WELLER



Seated—Thelma Dalmus, Catherine Sears, Claire Butler. *Standing*—Thomas Weller, Eli Chernin, Steve Pan, Thomas Frothingham, Edward Michelson, Andrew Spielman.

...Health is the Pillar...

“**W**ith dreams begins responsibility” is a theme of this Yearbook. If we are convinced that ill health breeds poverty and poverty breeds ill health, then the good health of people is the pillar supporting the edifice of economic and social well being. If we are convinced that the ill health of mankind everywhere potentially makes us less able, then we are obliged to alleviate the situation by our participation. Since the majority of that half of the world’s population who inhabit the tropics are thus plagued, people in Tropical Public Health everywhere should acknowledge their commitment.

Tropical medicine is not simply the purging of worms but the total process of revitalizing persons and nations by the prevention and control of disease and pestilence. I should hope that there will be more opportunities for experience and training in the tropics under well tutored programs provided by schools of public health.

To be effective, we must be practical. The needs of the tropics will not be met by absentee experts. In our ever shrinking world, the people in the tropics are our neighbors. Until they are able to produce the health forces they need, it is our task to offer assistance.

MYRTLE CATON



MYRTLE CATON

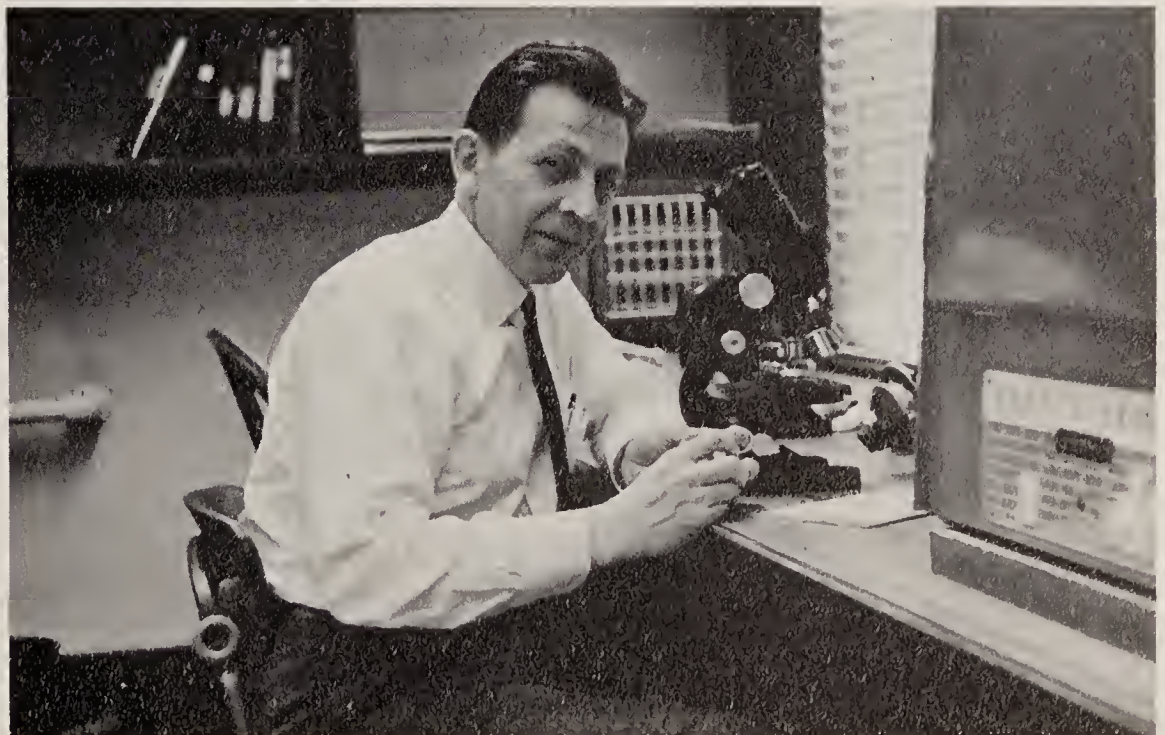
Worm burden



Smith, Kline, and French—
Philadelphia Museum of Art

Spielman expounding

FRANKLIN NEVA





FREDRICK J. STARE, S.B., S.M., Ph.D., M.D., A.M.
(hon.), S.D. (hon.)



Nutrition...1984

Twenty or so years from now it would please me as a Professor of Nutrition, Emeritus for ten years, to see that nutrition finally has been accepted as an important part of public health, preventive medicine, and medicine.

There are few schools of public health today, and fewer than half have any instruction in nutrition. Yet our government's foreign assistance program AID has, during the past year, announced that nutrition is to be given primary emphasis in our foreign health programs. In our own country the American Heart Association for the past year, and currently, is emphasizing changes in the American diet as the most effective way for the public to lessen the chances of developing coronary artery

disease. Food and nutrition are an important part of our biggest social problem, the expanding population. Who is to train health personnel in modern nutrition? Even at Harvard where we have a very active and large department of nutrition, our teaching opportunities are quite limited in both the School of Public Health and the School of Medicine.

Nutrition is an important part of modern public health. The foods we eat or do not eat are important to the health of the public and to you. I hope that at least by 1984 this will be understood by those responsible for guiding education in public health and appropriate action instituted.

I hope that long before I have been Emeritus for ten years our School of Public Health will have become active in operating a series of short courses and summer courses for refresher training of professional and para-health personnel. Such training is essential if we are going to provide sufficient personnel to meet our expanding needs for community health services.

And in research, I am confident that through improved diets and foods, better nutrition will have lessened the incidence of, and postponed the onset of, coronary heart disease, "strokes," essential hypertension, osteoporosis, renal and bladder stones, and a host of the enzymatic-defect diseases frequently referred to as inborn errors of metabolism.

By 1984 we may even have fluoridated all community waters in Massachusetts!

FREDRICK J. STARE



L. to r.—Jeanette Forsythe, Carl Seltzer, Michael Latham, Jean Mayer, Clifford Baile, Fredrick Stare, Madge Myers, Sheila Cronin, Stanley Gershoff, Agnes Huber, Mark Hegsted, Robert Geyer.

...Food For Thought...

The word "nutrition" is deceptive, with many meanings for many people. This field is expanding so rapidly that no one dares to retard its growth by subjecting it to definition. Consequently, the word will probably remain vague for years to come.

Nutrition can be thought of as an endless saga; the excitement of its past only enhances our enthusiasm for its future. As more is learned, more must be comprehended. As the past mechanisms are understood, an infinity of new directions beckons. Once we spoke of nutritionists as farmers, then as dietitians, then as biochemists. In twenty years, we shall speak of biophysicists, statisticians, and psychologists. Now we talk of the Krebs cycle. Then our computer will talk of pi mesons and electron spin.

In twenty years our psychologists will be able to tell us why Americans eat too much. Perhaps we will universally conclude that atherosclerosis is a nutritional disease after all. Maybe the hungry billions will be fed then; they could be fed even now.

My desire for our field is that it be put to use. The laboratories and surveys can produce the knowledge and techniques for the betterment of

mankind. We need the help of other disciplines to put them to work. Nutrition does not exist for itself; it exists in order to enrich human life. This is its greatest challenge. This is its highest hope.

Shall we start with fluorides?

RICHARD BROWN

Richard Brown makes a point.





The hungry could be fed even now . . .

WHO

. . . as past mechanisms are understood . . .

. . . an infinity of new directions beckons . . .



POPULATION STUDIES

Demography and Human Ecology

The real question is not population size in the future but the rate of increase today. How shall we provide decent conditions of life for the living generation, conditions in which men and women can live, and children can grow up, free of the desperate want experienced by the majority of human beings in this century? This is the urgent thrust of the population problem.

Bringing down rates of population growth to a manageably low level will require far more knowledge and experience than we now possess. Economic, sociological, medical, and educational research on a large scale and a wide front are urgently required. The problem may well be the most difficult mankind has ever faced, for its solution lies in controlling one of the basic drives of all living things—to reproduce.

The need to reduce rates of population growth is so urgent in many countries that immediate action on a large scale should be undertaken. Yet we in the University must try at the same time to deepen our understanding and improve our practice. We need to work in real societies with all their environmental and cultural differences, not only to discover underlying generalities, but also to learn how to adapt our actions to fit the range of human conditions. Most of the needed understanding will come from experience gained in birth control and family planning programs; members of the University should participate in these programs if they are to learn as much as possible from them. Because of its long experience and broad involvement in field projects throughout the world, the School of Public Health is uniquely fitted to work out appropriate means of participation.

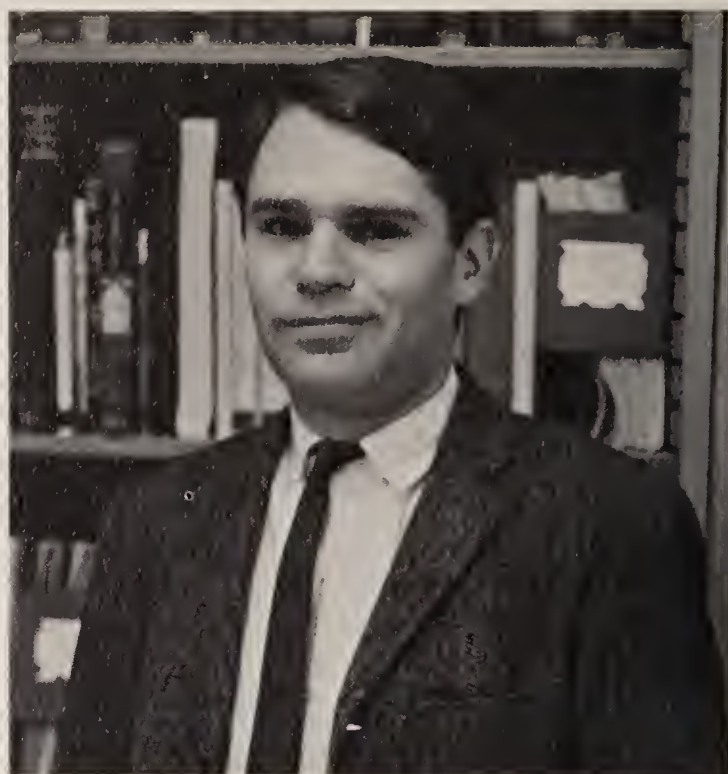
In essence, we are dealing with qualitative and not quantitative questions, with the quality of hu-

man life, and only incidentally with the quantity of people. In the long run, the Harvard Center for Population Studies will focus on the drama of living human beings, rather than on their entrances and their exits on the stage of life. We will be concerned with the physical health of human populations, with improvement of nutrition, reduction of vitality-sapping disease, and amelioration of genetic burdens. We will be concerned with relating the education of human populations to the changing needs of individuals and their societies. We will want to find better ways to fit environments to human beings—not only the earthly environment of air, water, and land, but also the social environment created by interactions among men.

ROGER REVELLE

ROGER REVELLE, A.B., Ph.D., Sc.D. (hon.), RICHARD SALTONSTALL Professor of Population Policy and Director of the Center for Population Studies.





RICHARD SEDER

...The ability to synthesize...

A broad but exact understanding of man's interaction with his total environment—both physical and social—must be the goal of human ecology. The grand scope of such a discipline will require its students and teachers to possess both a rich supply of specific knowledge from a multitude of diverse fields, and also the ability to synthesize

such knowledge, with imagination and due caution, into general principles which describe the unique ecology of *homo sapiens*.

Quantification must come not only from traditional demographic techniques, but also from the laws of thermodynamics, the findings of experi-

Seated—Marguerite Fee, Margaret Bermingham, Wilma Winters, Tillyruth Teixeira, Linda Sayegh, Dorothy Greenidge. *Standing*—John Wyon, Dieter Koch-Weser, David Heer. *Missing*—Patricia Brown, Stephen Plank, Joan Reid, Roger Revelle, Hilton Salhanick, John C. Snyder (Acting Chairman).



mental ecology and psychology, the regularities of genetic transmission, and mathematical formulations of evolutionary processes. Ecological equations, however, will succeed only when they minimize the number of simplifying assumptions, and maximize the number of phenomena they simultaneously consider. The complexity of ecology will reflect the complexity of nature; the multiplicity of qualifications required for each statement about human ecology will do justice to the richness and intertwining of factors relevant to man's various responses to the environment.

Yet despite its precision and complexity, the human ecology of the future will present summariz-

ing statements concerning both human behavior and environmental response which order volumes and libraries full of information into a few pages of symbols, and will allow substantively correct prediction of individual decision-making and an outline of world history for the next few centuries in large outline. Though many of the ecologist's conclusions will have the strangely familiar sound of philosophy and poetry written many millennia ago, their quantitative nature and their simultaneous specification of many significant variables will provide infinitely more powerful concepts for understanding and influencing the course of human affairs.

RICHARD SEDER

... We are dealing ... with the quality of human life, and only incidentally with the quantity of people ...



WHO

Environmental Health Sciences ♀

The objectives of environmental health are the control of hazards and improvement of the environment by political action, engineering, and other means for a host of reasons, including the threat to human health. Here we recognize the greatest need—to develop the methods for assessing whether these “threats” are more than potential. In one way or another, many methods of biological research may prove helpful. The environmental toxicologist has the opportunity of joining the experimental pharmacologist in exploiting the techniques and new knowledge of cell biology to determine the effects of environmental chemicals and drugs on biological systems. Limited ecologic studies of animal and plant communities have already shown that environmental pollution disturbs natural communities at much lower concentrations than those known to affect man; such studies are becoming urgent as population and pollution pressures threaten the extinction of “natural” communities in even the remotest parts of the earth.

Whole animal studies must also take on new dimensions. While extremely useful in the past,



JAMES L. WHITTENBERGER, S.B., M.D., A.M.
(hon.)

particularly with regard to new drugs, food additives, and the like, animal studies have not been sufficiently informative with respect to chronic effects of realistic exposures. Better information will probably come from broader selection of animal species, improved animal care, and wider application of the techniques of biochemistry, systemic physiology, genetics, and cell physiology.



Kneeling—Joseph Brain, N. Robert Frank. *Seated*—Margaret Hitchcock, Jaruna Vencauskas, Luisa C. Stigol, Mary Christopher. *Standing* — Edward J. Burger, Rowena Musenden, Gunnar L. Grimby, Sheldon D. Murphy, David E. Leith, James L. Whittenberger, Jere Mead.

The problems of "extrapolation to man" will remain with us, and are particularly difficult in the range of low toxicity—long-term chronic exposures, in which the end result may be shortening of the life span or tumor induction. Hence, epidemiology will continue to be an essential tool of environmental health research. Here also the development of methodology is of major concern. If urban health problems are primary today and for

the future, how do we study them with present methods? To study the effects of chemical pollution of air, water, and food is difficult but simple compared to the study of effects of social pathology in our urban environments. To organize the skills of many professional and academic disciplines for sound research in these areas is probably the greatest challenge in environmental health today.

JAMES L. WHITTENBERGER

...An environment...less and less natural...

Man is radically and rapidly altering his environment. Urbanization, increasing population density, industrialization, and scientific research and discovery create our modern, sophisticated environment, but one less and less "natural." Although we enjoy our new and easy urban way of life, and marvel at the advances that science brings, we have until recently given but little thought to the concomitant health hazards that threaten not only industrial workers but the population as a whole. Toxic chemicals and radioactive substances contaminate air, water, and soil, and eventually enter the food chain of man. Industrial wastes, automobile exhausts, atomic energy in medicine, industry, research, and power production, and the enormous array of chemicals used as food additives, pesticides, and insecticides will inevitably be associated with new and as yet little understood physiological and psychological stresses.

Epidemiologic studies suggest that causal relationships may exist between such environmental changes and sharp rises in the incidence of various chronic diseases. Levels of certain environmental contaminants are now being reached at which toxic symptoms begin to appear. Although no acute ill-

nesses or excess mortality from such causes have yet been reported, aside from the fog episodes as in London and Donora, we must nonetheless be aware of the accumulation over the years of pollutants, and of the chronic exposure of whole populations to them. As our population itself ages, it presumably becomes more susceptible to such hazards. Epidemiologic interpretations will be difficult in many cases, however, since the symptoms of exposure may be identical with those resulting from other causes, and because so many environmental factors are changing simultaneously.

With this picture in mind, one can foresee what lies ahead in the field of environmental health. As a newcomer in this field, I consider the problem of hazardous man-made environmental factors most challenging. The ultimate goals are prevention and control. More acute concern for health must stimulate state and local control programs. Greatly accelerated research into the sources, nature, and effects of the problems must provide better methods and instrumentation for more effective control.

Qualified personnel will also be needed. I would like to see more people interested in this field—not only farsighted engineers, meteorologists, and chemists with their creative new designs, predictive meteorologic equations, and catalytic new solutions, but also doctors, epidemiologists, and statisticians. Such variously skilled people will have to work side by side, and with the full cooperation of government and public, to devise new ways of maintaining a clean and healthy environment. Then the penalties of progress will not outweigh the rewards.

MELVA V. VIVES

MELVA VIVES



INDUSTRIAL HYGIENE

I view the air pollution problem and its potential health aspects as the major problem area facing the environmental health specialist during the next two decades. The last decade has seen recognition of the problem, starting with the passage of Public Law 159 in 1955. The next decade or two must see major improvements in air pollution control with the development of engineering solutions.

Two problems requiring early attention are the need for low cost methods of abating air pollution due to sulfur dioxide emissions from power plants and hydrocarbon emissions from automobile exhausts. These are fashionable and indeed significant problems; however, our engineering research in air pollution control during the next two decades must be broadly based, providing answers not only to the power plant and motor vehicle problems but devoting increased effort to the following specific areas:

1. New methods for handling fine metallurgical process fumes at high temperatures.
2. Methods for controlling acid mists and complex high vapor-pressure organic suspensions.
3. New methods for recovering large-volume chemical effluents which are difficult to absorb or remove by contact washing.

4. New devices for combustion of low levels of gases which create odor problems.
5. Continued studies on fundamental particle dynamics as applied to inertial separation, filtration, and electrostatic properties of particulates.
6. Continued investigations of the photochemical stability and physical chemistry of aerosols.
7. Fundamental studies on fixed and dynamic filters with a wide variety of aerosols.
8. Further studies on graded filter media for low loadings of air contaminants.
9. The development of temperature resistant fabrics able to withstand 500° to 1,000°F and still perform effectively as filter media.
10. Development of relationships from particle and equipment parameters which will enable the reliable prediction of performance from primary dimensions and rapidly evaluated properties of the particulate material.

Estimates of the cost of air pollution in the United States based on property damage, damage to crops, and disability and health losses range from 3 to 12 billion dollars per year. I am hopeful that with increased research and development in the areas listed above the next decade will see major advances in air pollution control.

LESLIE SILVERMAN
1914-1966

Seated—Joyce Archambeault, Jean Cudde, Rae Covey, Delia Croteau, Mary Corrigan. *Standing*—William Burgess, Peter Himot, Mihran Nalbandian, Eli Bulba, Frederick Viles, Jr., John Sullivan, Douglas Smith, Melvin First, Thomas Lynch, Parker Reist, Jacob Shapiro, Walter Herzig, Janet Walkley, Peter Schwartz, Robert Wecker, Lynne Champion.



Sanitary Engineering

To a visitor, perhaps the most impressive aspect of America is the evidence of our productive power. From twenty fabulous years of technological development, the results are seen in the abundance and diversity of goods in the stores, the new buildings, the long lines of automobiles, and the highly developed community services such as schools, hospitals and highways. We have experienced an escalation of economic development that is unique by any standard in economic history.

At the same time, however, another remarkable development is occurring—a development so significant that it may be said to mark a new direction in the evolution of social philosophy in the United States. As a nation we have become aware that the concomitant of industrialization is pollution, and that pollution affects health adversely—physical health, mental health, and economic health.

From factories, farms, and homes huge amounts of wastes are being dispersed into the environment. These unwanted products damage our economy and debase the quality of life. Some wastes persist for long times in the biosphere and may be carried great distances in air and water.

The pervasiveness of pollution is due to sustained and accelerated industrialization and to sustained and accelerated population growth. This is true not only in the United States and other rich nations, but also in poor nations with emerging economies and high aspirations. The problem of pollution has become almost unmanageable in some communities where the revolution of rising expectations is being frustrated by surging population growth.

What achievements of research are needed and can be anticipated in the next ten years? Each year thousands of new chemicals, drugs and ma-

terials are produced. Some of these will be used for better technology, for waste treatment, for reclamation of land, and for purifying air and water. Burgeoning industry has produced an astonishing range of new materials such as synthetic metals, extremely strong reinforcing fibers, conducting polymers, bendable glass, artificial leather, high temperature plastics and corrosion resistant coatings. A promising area for research in pollution control is being created by the alliance of the paper and plastics industries. New products from this union may be used to improve devices and techniques for the control and conservation of the environment and the elimination of disease. New materials for pipes, aqueducts, filters, reactors, diffusers, and building construction can mean, for example, better water supply, less expensive drainage and more effective air conditioning. With these new materials we may be able to solve one of the most challenging problems of water resource development—how to inject large quantities of waste water including flood water into the soil for purification, storage, and subsequent use.

Continuing notable advances may be expected in the power field with economic nuclear plants, more efficient fossil fuels, practical fuel cells, better rechargeable batteries and the development of geothermal steam as a primary resource. Hydrogen bombs are not conventional tools for digging canals, reservoirs and ports, but nuclear excavation looms large on the technological horizon as the cheapest way to move huge masses of earth. The coupling of nuclear power generators with desalination processes will open exciting frontiers in environmental engineering. The novel ways of deploying energy, the new synthetic compounds, the new products of materials science together with a better understanding of geophysical processes will make possible in the next ten years a better degree of regulation of the environment and, hopefully, will contribute to a higher level of health and well-being for man.

HAROLD A. THOMAS, JR.

郭 臣 臣 Kuo Hsi
 "Water is a living thing."
 ~1072 A.D.



HAROLD A. THOMAS, JR., S.B., S.M., S.D.

... Water is paramount...

A supply of good quality water is as essential for our health and well-being as it was for our ancestors. Over the past few generations, because of rapid industrial expansion, technological change, and the growth and concentration of population, the demand for good water has soared, often outstripping the supply. Yet the factors increasing the demand have frequently contributed simultaneously to diminishing the supply by contributing to pollution.

The old problem of water pollution has intensified at an alarming rate, and new factors are continually increasing the overall complexity. Water-borne viruses, especially hepatitis, pesticides, and detergents pollute nearly every major river system in the United States. Technology has failed to keep pace with the activities responsible for the new pollutants. Today, as advanced treatment processes such as adsorption and foam separation are proved feasible and economical, engineers must consider the potential re-use of treated water.

Lack of prudent water resource management has resulted in what President Johnson has called "a reckless devastation of our national heritage." We cannot pass on such a situation to the next generation. Adequate water is needed for the public and industry, for the propagation of aquatic life, for recreation as well as navigation, for agriculture, as well as power production. For many purposes, water quality is of paramount importance. Indices for measuring pollution costs must be developed for comparison with the costs of abatement.

The tradition of water planning at the municipal level must give way to basin-wide and regional planning. Such cooperation will lead to an increase in the inter-basin transfer of surface water, resulting in more dependable supplies for all areas involved. The sanitary engineering profession must recognize and implement its responsibility to speak out publicly on water problems. Today's public is ready to listen.

Perhaps the greatest future challenges are to be found in the developing nations. Such nations are just beginning to develop their water resources, which are sometimes a significant proportion of total natural resources. Therefore, they must make decisions between conflicting alternative uses, often without being able to predict long-range economic and social consequences. Hence, existing techniques for evaluating multipurpose proposals have to be perfected. Planning engineers should profit from past experience and mistakes, consciously providing for prevention of pollution. Then the developing nations would avoid a tragically expensive waste of an irreplaceable natural resource.

RUSSELL J. DELUCIA

Seated—Hanukah Geiwitz, Sandra Robinson, Lynn Anderson, Nina Sharik. *Standing*—Myron Fiering, Ralph Mitchell, Richard Woodward, Harold Thomas, Kenneth Young, John Schaake, Edward Moore.



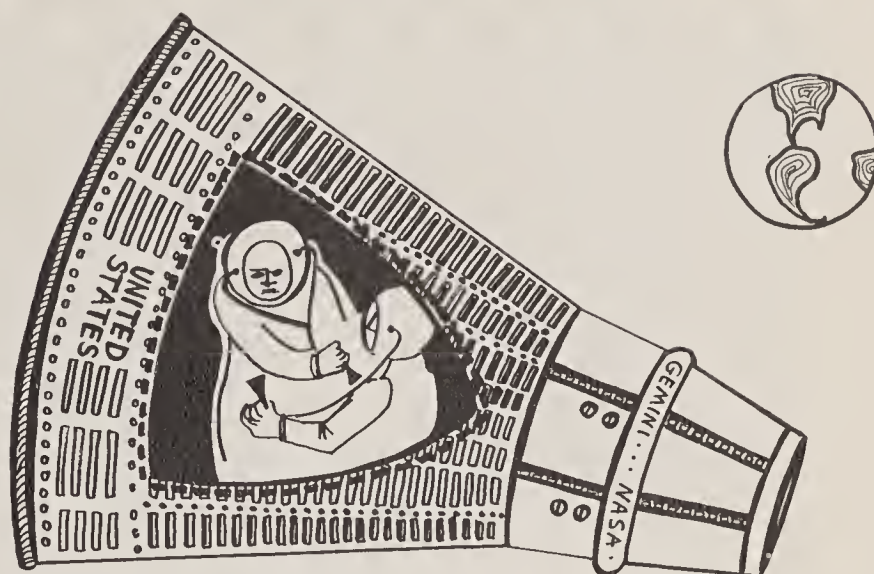
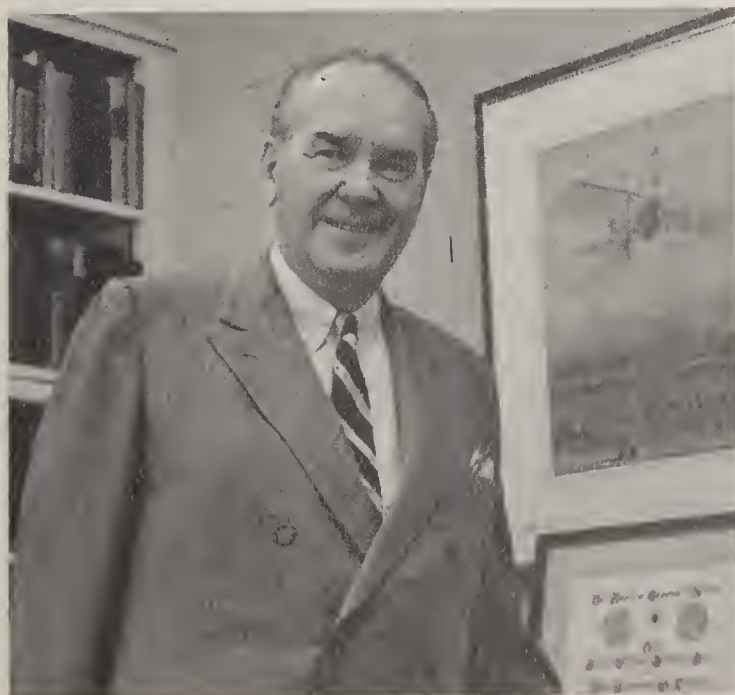
AEROSPACE MEDICINE

Problems-Current and Future

The program in aerospace medicine at the Guggenheim Center for Aerospace Health and Safety provides physicians, biologists and engineers with the specialized training which will enable them to help resolve the complex human problems encountered in air transportation and in the exploration of space. This interdisciplinary teaching program coordinates the work of specialists in medicine, experimental psychology, physiology, anthropology, and engineering. Emphasis is placed on current and future problems from the safety of flight both within and outside the earth's atmosphere. Also, an attempt is being made to translate the findings in aerospace fields to other forms of transportation, especially in relation to safety on the highways.

Since 1950 approximately 150 physicians have specialized in aerospace health and safety at this school, and they are now playing important roles in the military services, in the aerospace industries, and in the man-in-space program. There are fifteen physicians in the aviation program in the current year. Plans are being initiated to ex-

ROSS A. MCFARLAND, A.B., Ph.D., S.D. (hon.)



pand the academic program so that a larger number of students will spend two or three years here for advanced training and research in this specialty. Although there are many problems specifically related to aerospace medicine, the major portion of the work has its roots in the various disciplines basic to preventive medicine and public health.

During the year each student selects a field of interest in which he does specialized research. A large number of significant papers have been written, and it is of interest to note that in subsequent years original work has been reported stemming from the research initiated here.

The major research studies being carried out at the present time fall within the following areas: (1) the development of physiological and psychological standards for the performance of astronauts in the Apollo project; (2) the effects of adverse environments, especially high altitude and variations in temperature, on human performance; (3) studies of the basic visual processes in the perception of computer-generated patterns and textures; (4) an analysis of the safety aspect of vehicular equipment from the point of view of anthropometry and biotechnology; (5) an epidemiological analysis of the most important contributing factors to accidental injuries and fatalities on the highway.

ROSS MCFARLAND

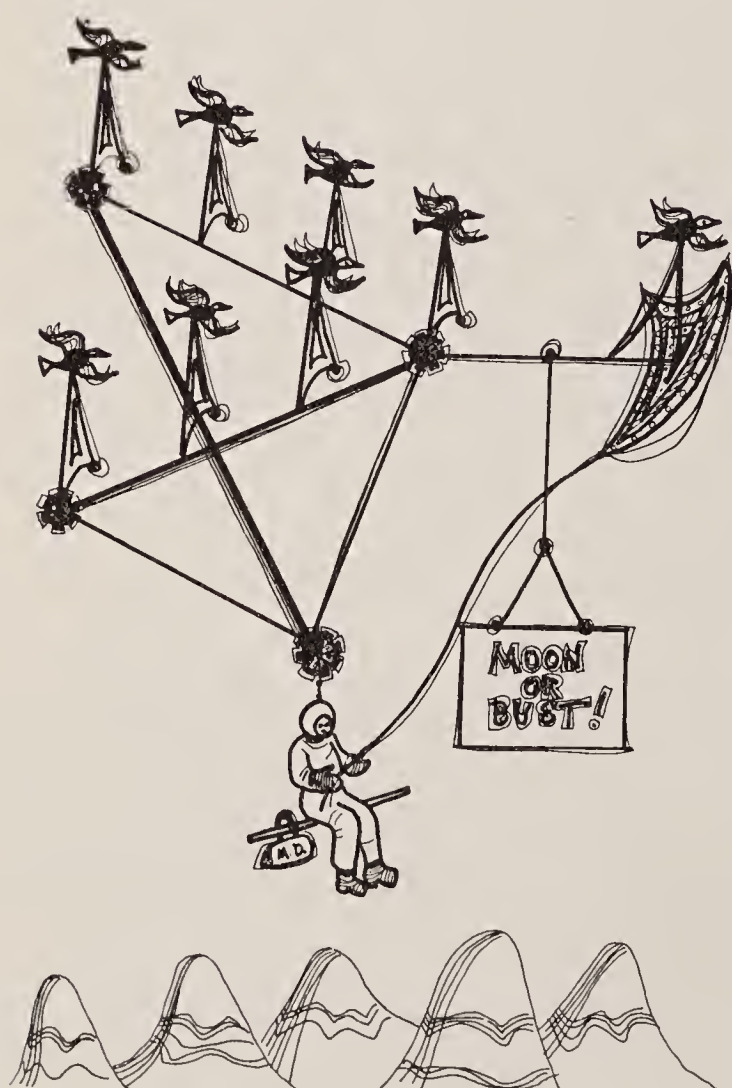


LEONARD JOHNSON

Prognostications for the next two decades in the field of aerospace medicine are best made in the perspective of historical accomplishments. In the public health context, not only is the specific function of an advance significant, but also its cost and feasibility, as history clearly shows.

Medical science as applied to the problems of aviation and space exploration has exemplified the rapid application of "pure" research to very practical goals. The gains in knowledge obtained in the various investigations of aviation medicine have actually contributed not only to the field itself, but in many ways to expediting and improving such diverse activities as commerce, finance, nutrition, politics, communications, and international affairs.

...To Extend Man's Capacities...



The phenomenal growth of air transportation and travel in just over a half century promises to continue at an equally impressive rate with expansion into the realm of space exploration and conquest. Advances in knowledge at times occur more rapidly than their implementation can follow, and lags occur. A continuing challenge to aviation medicine scientists will be to minimize the gaps. The public health worker in the field will be particularly concerned with the need to extend requisite protection to all participants both in routine programs and in experimental projects.

Aerospace medicine will continue to support aerospace progress by learning more about man's capacities, limits, and abilities to adapt to new environments. Aerospace medicine must extend man's natural capacities, and make a friend of the currently "hostile" world of outer space. On this planet and in its atmosphere, there must be maximal application of new knowledge to increase aviation safety.

If, optimistically, space exploration does become "the moral equivalent of war," I would hope that space medicine would faithfully support the endeavor, toward the furtherance of health and peace for all earth-dwellers.

LEONARD W. JOHNSON, JR.

Plus



From earth to space: Unidentified, Daniel Spoor, Leonard Johnson, Richard Leet, Samuel Youngman, John Fahrni, Unidentified, Ronald Green, Alfred Cheng, Elmer Hermann, Eric Lindstrom, Douglas Adamson, Guthrie Turner, Alan Harter, Unidentified, Ross McFarland, Unidentified.

... We need... Utopian thinking...

An Overview And Some Suggestions

I hope that when we finally reach 1984, we shall use the Orwellian landmark to decide where we want to go from there. In general, it seems to me that what we most need in Public Health is utopian thinking, i.e., an elucidation of what the good life is. We can then decide on the form of our institutions and on our research priorities so as to achieve it. What we have at present is the "because it is there" approach: we almost automatically undertake what is technologically feasible whether or not it is, in fact, improving the quality of life. At best, we recognize a problem—i.e., overpopulation—and we seek for means of mitigating it; but we are unwilling or unable to go the last and essential step and discuss optimum population whether for the United States or for the world; we could then discuss how we shall approach this level and how we can stay there.

When looking back in 1984 on the Public Health of the 60's, I think we will be appalled by the lack of definition of our goals, the disregard of the social problems causing disease and caused by disease, the toleration of profound inequality before death and sickness, the indifference to obvious trends until the problems become almost out of hand, the ridiculous belief that the cure to all diseases is a "magic bullet" or a gadget and the fact that so much more effort is expended to cure disease than to prevent it.

JEAN MAYER



JEAN MAYER, B.A., B.Sc., M.Sc., Ph.D., D.Sc.



...And the balanced integration of many disciplines...

Today's graduate in public health enters the community ignorant of how to cope with disaster. It is as if disaster were either an outdated topic or one unworthy of academic attention. Paradoxically, this head-in-the-sand perspective co-exists with an increasing risk of disaster.

The individual in public health is trained to be cognizant of the numerous factors that pose a threat to man's health and survival. He is presumed to be capable of executing an appropriate plan of action upon confrontation of such threats. Under ordinary circumstances this entails evaluation of whatever assistance is required. In the face of disaster this may mean provision of leadership in isolation from the expertise of others. To instill general principles vaguely related to disaster does not constitute preparation of the individual for such an onerous task.

It is obvious that a subject as complex as disaster requires specific treatment—a synthesis of the many disciplines which bear on disaster presented in such a manner that the individual knows what to do. It is equally important that he be trained in how to effect his educated decisions.

There are a number of essential ingredients for such a course. A case study book compiled to provide illustrative examples of disasters of various types and magnitude would serve as an excellent foundation. Harvard's interdepartmental course, "The Human Community," has aptly demonstrated the effectiveness of case studies combined with seminar teaching. Audiovisual supplementation would be mandatory. *The teaching challenge would lie in the balanced integration of many disciplines. This course would necessitate inclusion of more departments than have been encompassed by any previous interdepartmental course—no department could be excluded and, indeed, consultation beyond the confines of the school would be required.*

The individual must be taught not only the necessary information but the means for making appropriate decisions. He must be given the opportunity to evaluate, to establish priorities, to act. In clinical medicine these are the essential

components of effective action. Since there can be no apprenticeship in disaster, emphasis must rest on interpretation of the problems raised by the case studies. As in the clinical situation the chosen course of action must be subjected to scrutiny and constructive criticism. The course will have accomplished nothing if evaluation is based on ability to parrot facts.



WILLIAM MACPHERSON

Leaning on the Broad Street pump will not inspire effective leadership in the event of disaster. Nor will a deluge of words. Nor will the gleanings from present modes of training—and one cannot take refuge in his being a specialist.

WILLIAM J. MACPHERSON



And There Has To Be Mutual Respect

In January, Dr. N. R. E. Fendall, formerly Director of Health Services in Kenya, and now with the Rockefeller Foundation, spoke at a seminar in the Department of Tropical Public Health. His remarks admirably summarized the concepts that should underly a successful program for using auxiliary personnel—in Kenya or Boston. A condensed version of his remarks appears below.

Health services must attempt to achieve a total outreach as rapidly as possible if they are to have any significant impact on standards of health. The individual wants succour when sick and the design of any health service must take cognizance of this felt want if it is to succeed. Community health services should develop out of the attempt to provide total medical care to the individual in his home environment.

If this is accepted, then within the limits of economic potential, educational resources, demographic trends and the disease pattern, auxiliary medical and health personnel are essential in the less privileged countries. These factors form the common pattern for a situation which may be described as acute or chronic. Realistic planning must needs accept that the cure is a long-term one: that there is no easy or quick solution.

The terms professional, para-medical, sub-professional, and auxiliary should be clearly defined. Professional is restricted to the physician of full secondary schooling and university education: para-medical is used to describe personnel who are of equal educational standard but supportive to the physician, for example the nurse. Sub-professional describes the near doctor, near nurse, or near sanitary engineer. Educationally they have an incomplete secondary education and an abridged technical education. The term auxiliary should be used for a category of worker of middle school education and a technical educa-

tion limited in breadth, depth, and time. There is a clear and wide gap between the auxiliary on the one hand and the professional and para-medical on the other. Terminology of auxiliaries is important to status, self-respect and identity. The word sub-professional is psychologically damaging and derogatory and should not be used in a generic fashion.

Auxiliaries may properly be used in two ways, as "assistants to" and "substitutes for" more highly trained personnel. Their function is to deal with routine situations, provide emergency medical care and to recognize major abnormalities as such. They must be trained for applied memory and limited vocational skills. In consequence proper supervision of a supportive and continuing education nature, is essential.

Given the support of properly trained and properly utilized auxiliary the professional and para-medical personnel can then use their training in scientific medicine to full advantage. *Failure to provide an auxiliary cadre of workers, and inability to provide a setting to which the professional has been trained leads to waste, frustration and mal-distribution.* If one accepts that the physician is trained to scientific medicine, then he should be provided with the tools for the job. He should be reserved for the qualitative aspects of medicine, leaving the auxiliary, under supervision, to cope with the quantitative. In this manner the professional discharges both his consultative and leadership roles, and obtains a measure of satisfaction.

The proper utilization of the medical and health auxiliary requires a defining of the need, the purpose, the role and the function. It is then necessary to fit the man to the job and the tools available, and to fit the job to the man. This means that the organization of the service has to be designed to admit of the auxiliary; and his training has to be tailored to the specific job requirements. There has to be an understanding by both the professional and the para-medical worker on the one hand, and the auxiliary on the other of their respective roles. And there has to be mutual respect.

N. R. E. FENDALL

N. R. E. FENDALL, M.D.



A Series of Listening Posts

Cities and their problems are fast becoming the problems of public health. The editors feel that Professor René Dubos' Delta Omega address in January brilliantly defined this new challenge. Below are some excerpts from Professor Dubos' address.

. . . The most important problems of the day . . . are the problems of the city. They are the problems of the city because as you well know there are only two possibilities for the future of man. Either all of us will be blown out of existence by nuclear warfare, or if we are not, most of us within three or four decades will be living in cities extending over a hundred miles or more . . .

First let me express my faith in mankind. I have enough faith in the human condition to believe that we are going to survive. Moreover, I have enough faith in the human condition to believe that we will eventually achieve some adaptation to the conditions of life as we will experience them in the large cities . . . But I also believe that this adaptation will be achieved at the cost of much human suffering, and at the cost of huge economic and social problems . . .

. . . we as students of Public Health are concerned not only with economic production, not only with reproduction of the species, but also with the whole life of individual persons. We have to recast the concept of biological adaptation to introduce into it elements that are very different from those of the biologist; namely, the welfare and happiness of the individual after he is no longer an essential part of the economic structure. . . . *What I believe is likely to happen, what I fear is most certain to happen is that we shall become adapted biologically to all forms of environmental pollution which are accumulating throughout our lives; we will accept them because they do not interfere in an obvious manner with the only aspects of life that we know how to measure, namely the gross national product and the number of children.* Because of this we will deny that environmental pollution is a problem, and yet it is plainly obvious that if we knew how to state this more accurately, the questions related to happiness, and to the ability of man to function throughout his life span, we would discover that social adaptation may be extremely destructive to the higher functions of man.

. . . Man is of course a gregarious animal, man needs association with others; in fact man searches association with others. Witness the fact that the most crowded and the most traumatic cities are also the ones that have the greatest appeal for human beings. I think there is little doubt that a certain density is essential for the development of human cultures . . . But it is also true that man can become all too readily adapted to intense crowding. And no one has clearly measured the consequences of such adaptation . . . I have no doubt that children can become adapted and indeed are becoming adapted to crowding to such an extent that it has become to them almost a biological necessity, but this is no evidence that this is a useful type of adaptation . . . We have to learn to recognize what is the amount of stimulation that is optimum for social functioning, but also learn to recognize at what level stimulation becomes dangerous for the future. What impresses me, is that man can become adapted to almost anything. So the fact that human beings are surviving and functioning in the heart of New York City is no evidence that this is compatible with the survival of human societies or at least compatible with the survival of human values . . . this problem of adaptation to an environment which is compatible with organic life but incompatible with human values is probably the largest single problem of our cities . . .

. . . Since adaptation can be evaluated only by taking into account the whole life span of the individual, techniques of experimental study in medical schools, in research institutes, in your own laboratories, are not well suited for answering the most important problems of human life, especially of urban life. We have developed a whole biological knowledge through experiments dealing with acute situations, whereas what we must concern ourselves with is the effect of situations that do not appear at first sight to be traumatic, and yet in the long run can become destructive . . . This by the way applies not only to technological innovations, but I believe also to social innovations.

. . . I believe the prospective study of the damaging effects of ionizing radiation will in the future be considered a turning point in our whole social approach to the problem of environmental pollution: that anyone who introduces a new technology, a social innovation must present evidence extending over the whole life span of the species concerning the likely biological consequences of that innovation.

. . . I would hope that our societies would also develop a series of listening posts, which would constantly sample throughout the population evidence of physiological disturbances that might be the effect of changes in the social order . . . We must be bold enough to imagine the future, not to drift along with the progress of technology, not to let technology become an independent force, as it is becoming at the present time. We must develop some kind of vision, and in particular, we should try to imagine what our cities should be.

. . . Few scientists concern themselves with the problem of how man functions biologically and psychologically within our cities. And how should the environment be constructed so that man functions in a way compatible with the quality of human life? The fact that there is so little scientific discussion of these problems points to the enormous area of ignorance for which I believe medical schools and schools of public health are largely responsible, since it should be their responsibility to study these problems . . . this points to the need for developing a study of man, a study of his biological needs, of his true deep biological needs as well as a study of his aspirations, a kind of human biology which would be different from animal biology

. . . Even though man has not changed genetically, his potentialities are still much larger than what has been exploited so far. We can start with the conviction that by manipulating the environment, we can make man become better than what he is; certainly develop a larger variety of phenotypic expressions. It is out of the immense diversities of human environment and out of the wide range of genetic potentialities of human beings that the richness of our civilizations has emerged. . . . the potentialities of man are still so great that we can with all our imagination and our heart prepare for an even greater future.

RENE DUBOS

CLASS

1965-66



Can hardly wait to graduate



I will return to the muffled silence of the eternal snows hopefully able "to love the little trade which I have learned and be content with it."
- Marcus Aurelius

"And if you take one from three-hundred and sixty-five, what will remain?"

"Three hundred and sixty-four, of course."

Humpty Dumpty looked doubtful, "I'd rather see that done on paper," he said.

-Through A Looking Glass

"To Be or not to Be," a French Canadian or a French-Speaking Canadian, that's the question.

I used to think my motives were altruistic, but now I'm sure it's money that appeals to me.



"Man will destroy himself by his halfhearted cleverness."
- Bertrand Russell

New Englander by Birth
Californian by Training
Maine-iac by Practice
Pacific Islander by Choice
Bostonian by Necessity
Destination:
UNKNOWN

I am an errant pathologist who left tissues aberrant to learn statistical errors, α and β



I am an ardent Republican with philosophy undimmed by exposure to Washington politics.

All my life I have been up to my neck in children—both personally and professionally.

No, I won't volunteer for the first ride in the LEM. From the looks of it, it will never fly.



VAULT FOR
Public Health
Practice
HANDOUTS

HEALTH-INDUSTRY
BIOSTAT
TOXICOLOGY
RADIATION PHYSICS

C. Peters

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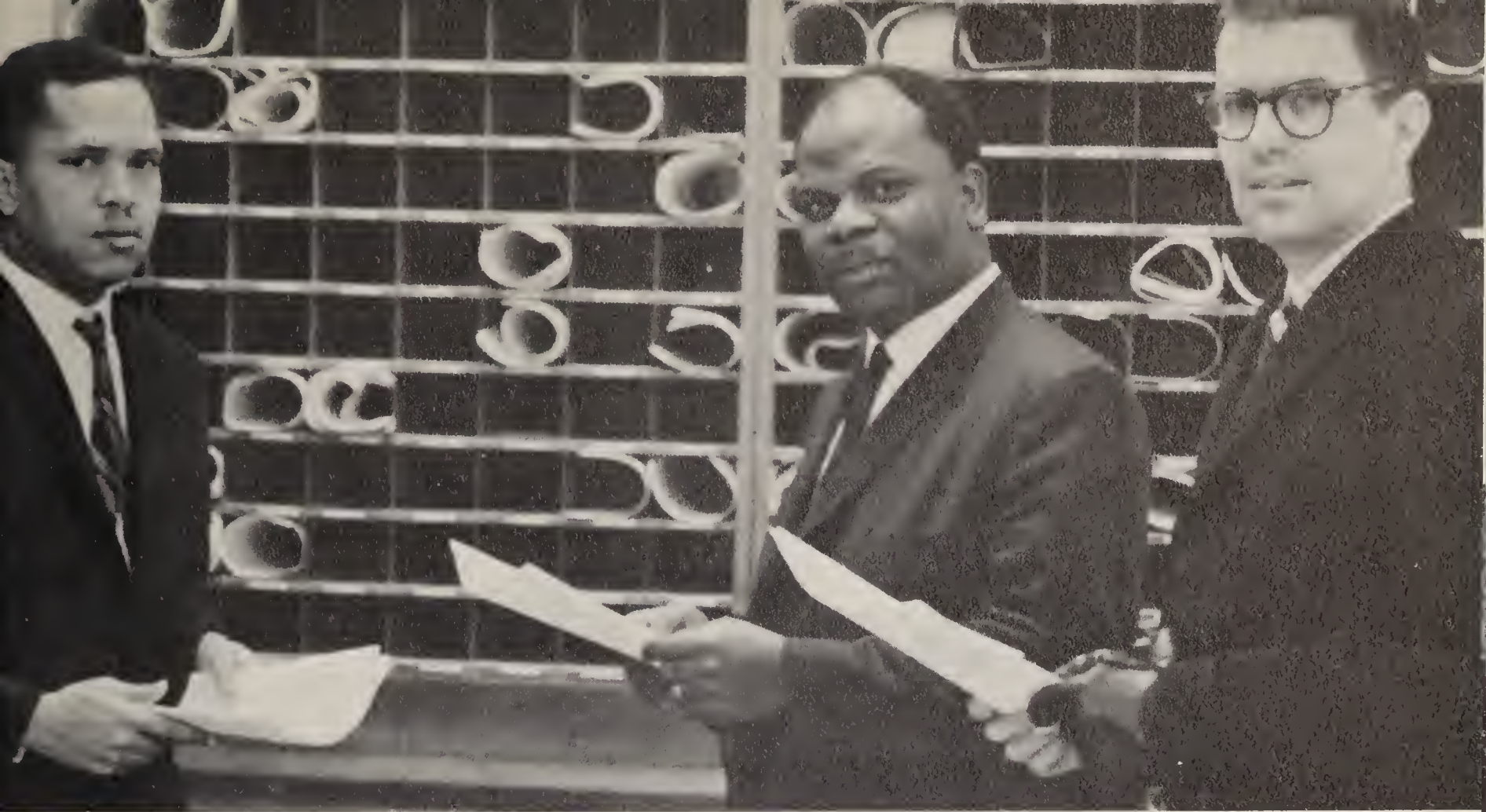
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*Picture not taken.

**Deceased.



Halmond C. Dyer, Babalola A. Dada, John M. Peters

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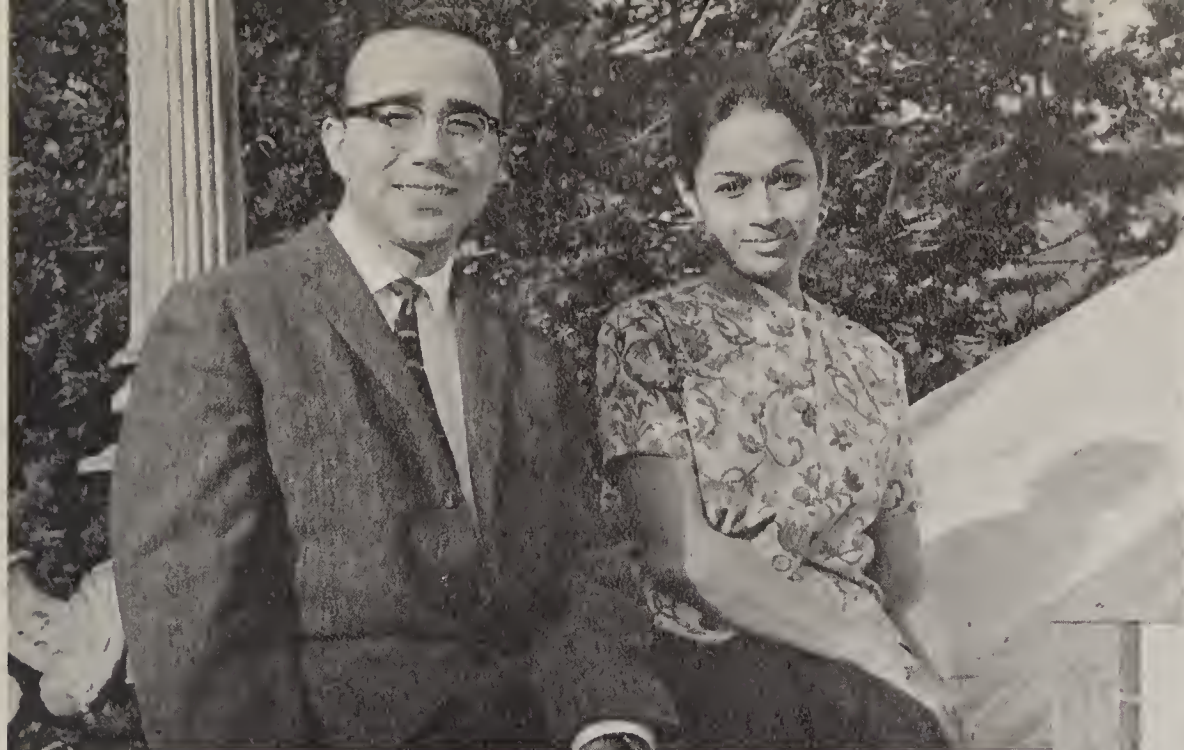
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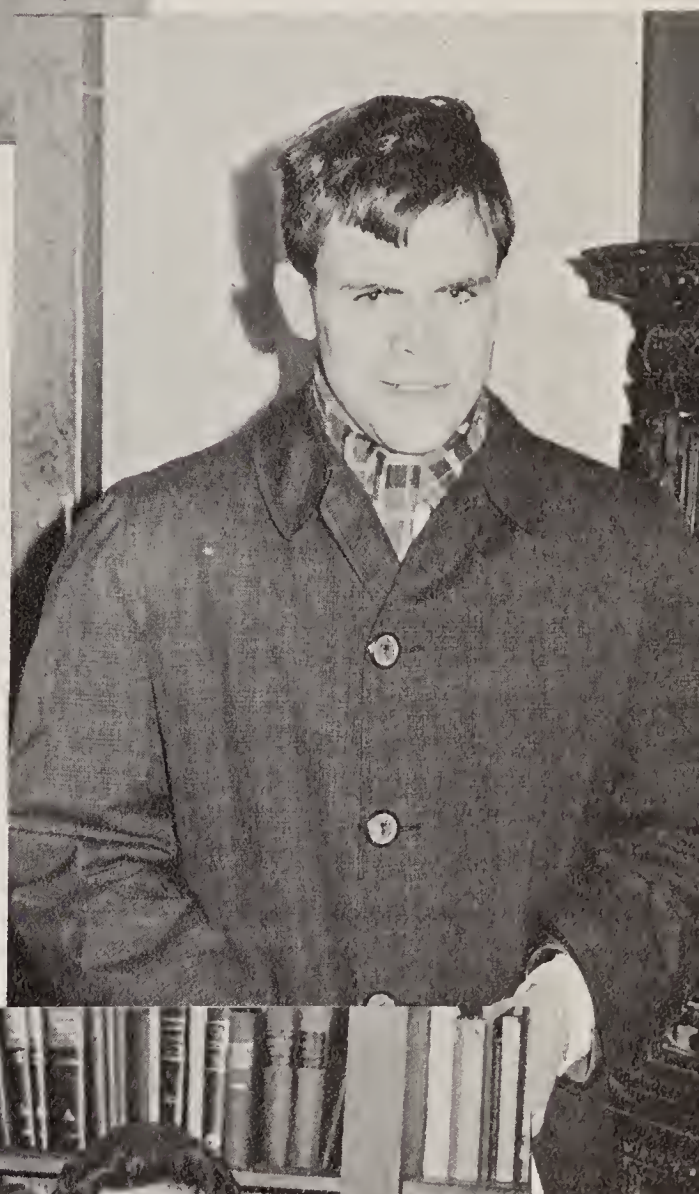
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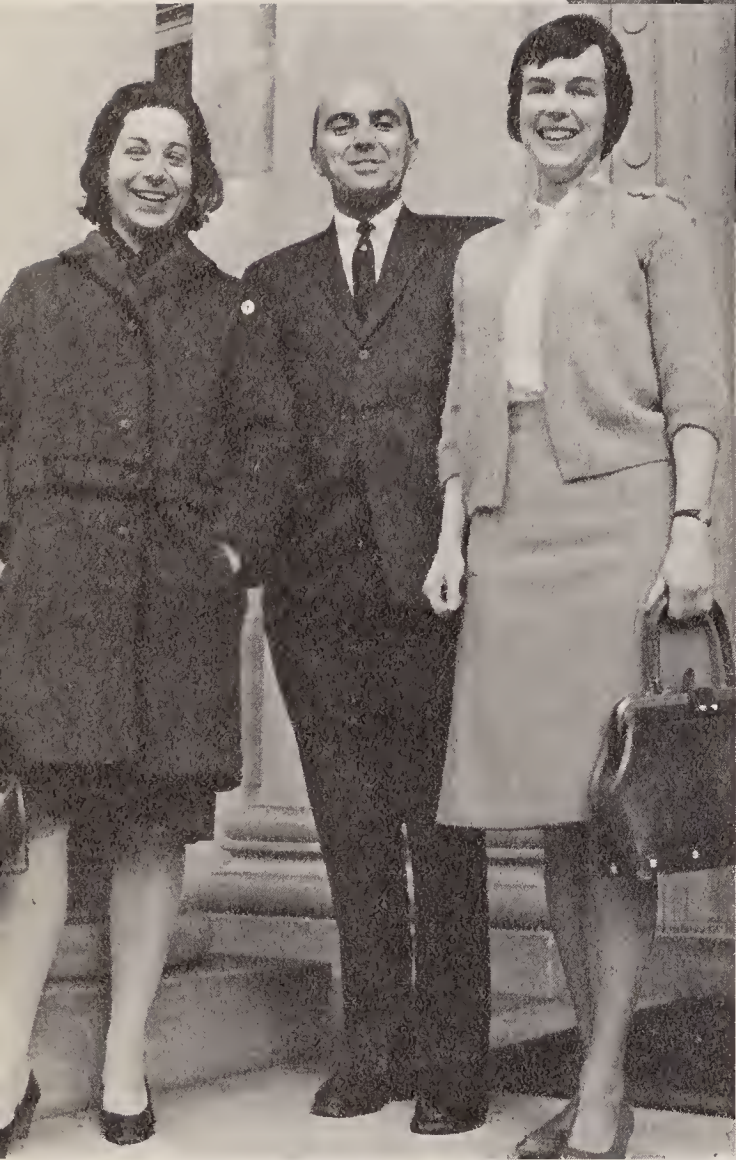
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Dwyer, Fritz Daguiard



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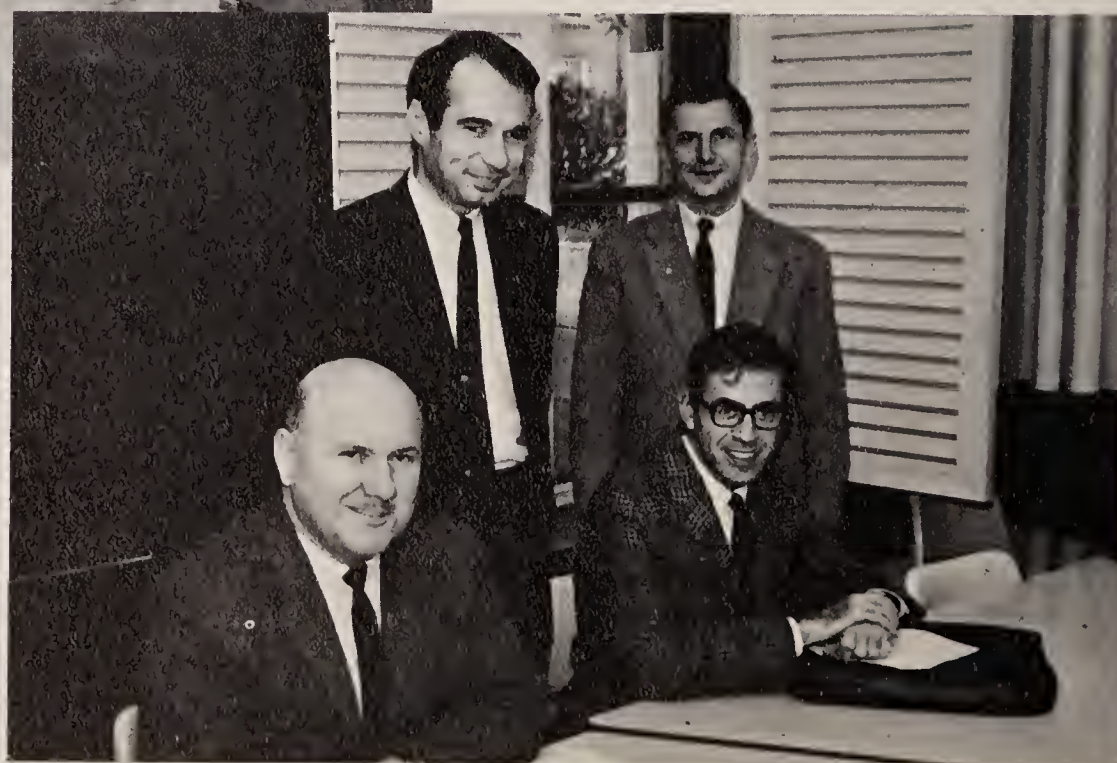
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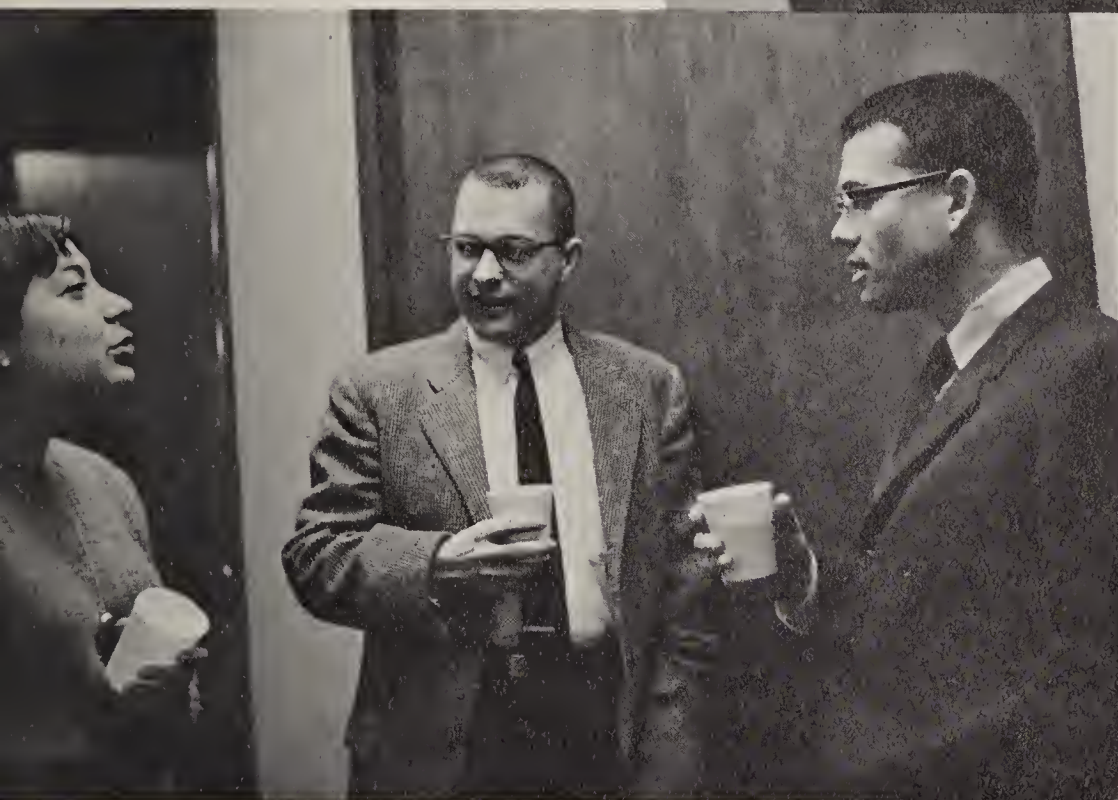


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Maria C. Vera, William
M. Moore, Donald E.
Goldstone

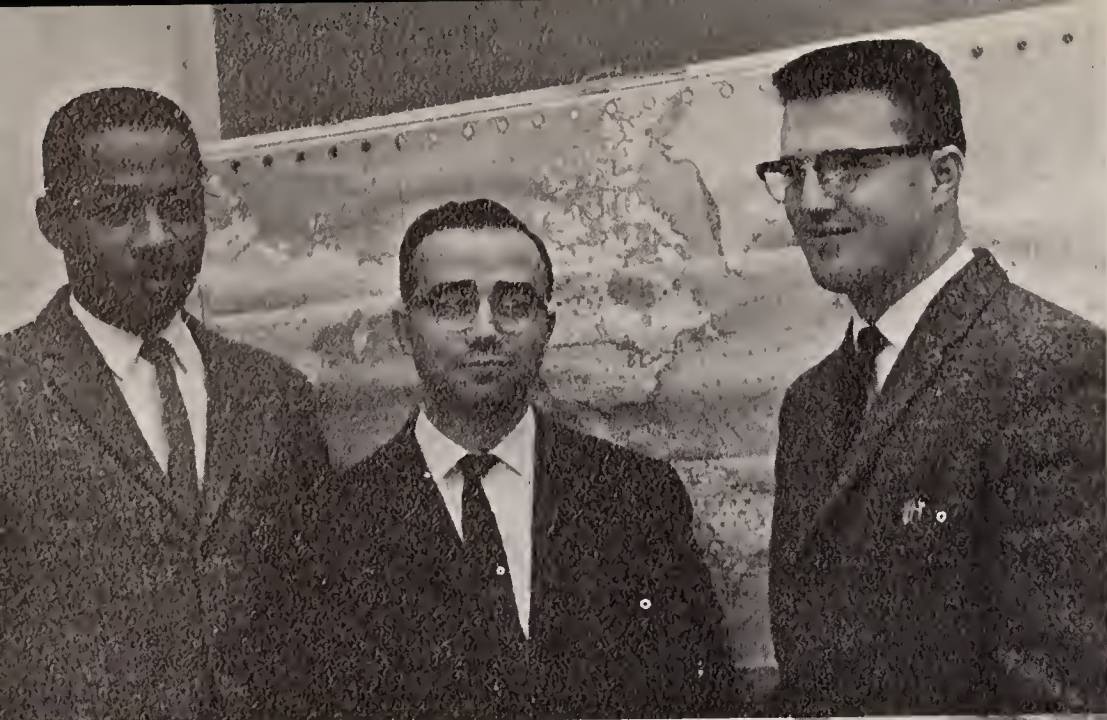


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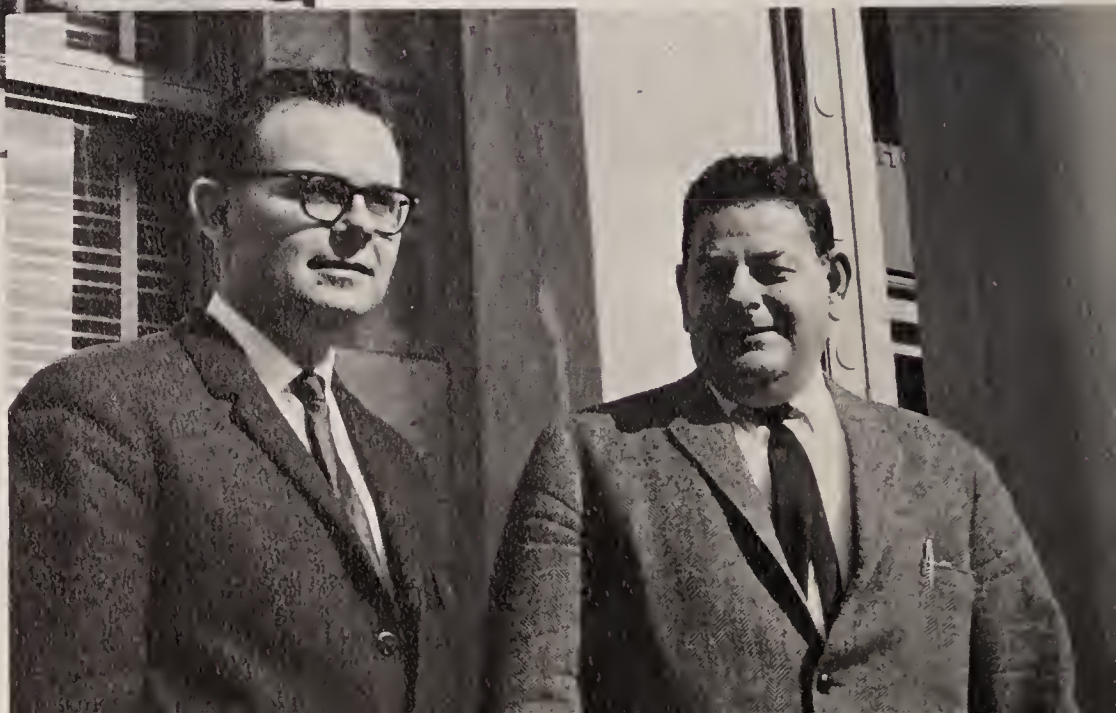
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Stephen P. Garza, Dorothy J. Ganick,
Marise S. Gottlieb



Yuling Li, Judith D. Goldberg, Elizabeth L. Watkins



Harvey Collins

1914-1966

His *bonhomie*, brilliance and good will were
manifest to those of us privileged to know him.
E. D. R.

Class of 1966...Names... Addresses...Biographies...

ADAMSON, GODFREY DOUGLAS JR.—2725 Van Ness Avenue, San Francisco, Calif.; B.S., University of Kentucky, 1953; M.D., Vanderbilt University, 1957; (Aerospace Medicine). Wife: Rosemary; children: Mary, 8; Becky, 7; Kim, 5. Director, Medical Services and Squadron Flight Surgeon (USAF), Melbourne, Australia.

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BASS, FREDERIC—148 Lake Shore Drive, Duxbury, Mass.; B.S., Antioch College, 1955; M.D., Western Reserve, 1959; (Epidemiology). Wife: Judith; child: Jenifer, 6 mos. Director, Newark Tuberculosis Project, New Jersey Dept. of Health.

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SPOOR, DANIEL HARRY — North Street, Medfield, Mass.; B.A., University of Texas, 1954; M.D., University of Texas, 1958; (Aviation Medicine). Wife: Janice; children: Leslie, 8; Scott, 7; Tracy, 5; Mallory, 3; Shannon, 2. Director, Aerospace Medicine and OIC, Moron Dispensary, Moron Air Base, Seville, Spain.

STERN, JUDITH SCHNEIDER—900 Memorial Drive, Apt. 1101 W., Cambridge, Mass.; B.S., Cornell University, 1964; (Nutrition). Husband: Richard. Graduate Research Asst., M.I.T., Cambridge, Mass.

THOMPSON, DORIS HARRELL—2118 Second Street, Lake Charles, Louisiana; B.S., Louisiana State University, 1951; M.D., University of Michigan, 1958; (Maternal and Child Health). Husband: John; children: Sarah, 11; John, Jr., 9; Benjamin, 3. Pediatrician, Collaborative Child Development Program, Charity Hospital, New Orleans, La.

TURNER, GUTHRIE LEWIS JR. — Route 3, Snow Hill, North Carolina; B.S., Shaw University, 1949; M.D., Howard University, 1953; (Aviation Medicine). Wife: Ellaworth; children: Kimberley, 7; Kevin, 5; Karen, 1. Flight Surgeon, U.S. Army Aviation Center, Fort Rucker, Alabama.

VERA, MARIA CRISTINA—Avenida Espejo 0515, Santiago, Chile; Bach. Biol., Universidad de Chile, 1956; M.D., Universidad de Chile, 1964; (Maternal and Child Health). Pediatrics Dept., Hospital Militar, Bogota, Colombia.

VIVES, MELVA VILORIA—50 Harvard Street, Cubao, Quezon City, Philippines; B.S., Ch.E., University of Santo Tomas, 1962; (Radiation Health Physics). Scientist I, Philippine Atomic Energy Com., Manila, Phil.

WAGONER, JOSEPH KIRBY — National Cancer Institute, Epidemiology Branch, NIH, Bethesda, Md. 20014; B.S., College of St. Thomas, 1957; M.S., University of Minnesota, 1960; (Epidemiology and Biostatistics). Wife: Jeanne; children: Joseph, 4; John, 3; James, 18 mos. Statistician, Nat'l. Cancer Institute, NIH, Bethesda, Md.

WARRAM, JAMES HEBER JR.—705 Northeast 14th Street, Oklahoma City, Oklahoma 73104; B.S., University of Oklahoma, 1957; M.D., Harvard University, 1961; (Biostatistics). Wife: Susan; children: Margaret, 2; James, 1. Preventive Medicine Officer, Div. of Preventive Medicine, Walter Reed Army Institute of Research, Washington, D.C.

WATKINS, ELIZABETH LAW — 5 Cutler Avenue, Cambridge, Mass.; A.B., Bryn Mawr College, 1944; M.S.S.A., Western Reserve University, 1950; S.M. in Hyg., Harvard University, 1958; (Maternal and Child Health). Asst. Professor of Social Work in Public Health, University of Michigan School of Public Health.

WILSON, CHARLES TATE—c/o L. E. Wilson, Roberta, Georgia; A.B., Mercer University, 1959; M.S.W., Florida State University, 1961; (Public Health Practice). Medical Social Consultant, Tri-County District Health, Aurora, Colorado.

WILSON, DOROTHY — Box 4392, Panama. M.D., University of Panama, 1955; (Nutrition). Medical Officer, INCAP, Guatemala.

WITTE, JOHN JACOB—Communicable Disease Center, Atlanta, Georgia. A.B., Hope College, 1954; M.D., Johns Hopkins University, 1959; (Tropical Public Health and Microbiology). Wife: Ann; child: Susan, 3. Deputy Chief, Surveillance Section, Communicable Disease Center, Atlanta, Ga.

WORTH, DOROTHY JANE—33 Washington Street, Newton, Mass. 02158; M.D., St. Louis University, 1956; (Maternal and Child Health). Husband: Robert; children: Benjamin, 8; Joshua, 6; Rachel, 4; Isaac, 2; Nathaniel, 10 mos. Coordinator of Maternal and Child Health, Newton Health Department, Newton, Mass.

YEN, STELLA B.—36 Mansfield Road, Wellesley, Mass.; Aurora University, 1949; St. Thomas University, Manila, 1954; (Maternal and Child Health). Husband: Ming Wong; children: Mary, 8; Robby, 6. Anesthesiologist, Boston Lying-in Hospital, Boston, Mass.

YOUNGMAN, SAMUEL ANTES—2 Round Hill Road, Williamsport, Pa.; B.S., Franklin and Marshall College, 1946; M.D., University of Pennsylvania, 1949; (Aviation Medicine). Wife: Phyllis; children: Samuel, III, 11; Linda, 8. Senior Medical Officer and Flight Surgeon, U.S.S. Wasp.



Peluso

*D'ou venons-nous?
Que sommes-nous?
Ou allons-nous?*



Courtesy, Boston Museum of Fine Arts

By the time this Yearbook has been printed, we, the students of the 1966 Class, will have completed a wide variety of highly specialized courses. We will have absorbed and regurgitated much knowledge and not a little nonsense. We will have been graded, like steer in the Chicago stockyards, and found to be superb, mediocre or deficient. In June we will take up our next assignments better equipped, it is hoped, to contribute to the material well-being which is characteristic of this technological age or to control disease and diminish want in underprivileged communities. But although our training has been specialized, I suspect that it will have led us, paradoxically, to an even greater awareness of the versatility of public health work and its involvement in the scientific, social, political, economic and aesthetic spheres of man's existence. It is this broad scope which makes a career in public health fascinating, for it challenges to the full our unique power of imagination and tests our humanitarian qualities. Bearing this in mind, we may agree that if a public health program is to be effective, a purely technical approach will, in the long run, be inadequate unless complemented by a recognition of the concomitant humanitarian requirements. With the rapid and apparently inevitable trend towards overcrowded urban life, bigger bureaucracies and lack of concern for the individual, it becomes increasingly important to reflect on Dubos' statement which, though it referred to the art and compassion of medicine, is as apt in the public health sphere as in the consulting room—"Of course one can manage without all that and still be a doctor, but in that case one should realize that the only thing that makes us different from the veterinarian is the clientele." It seems unfortunate, therefore, that most Schools of Public Health make little formal attempt to encourage reflection on the fundamental role which the humanities play; understandably, the emphasis is on technical competence but, in view of the human behavioral problems which will accelerate as overcrowding increases, must this be accepted as sufficient?

FERGUS MCCULLOUGH



... leading ...



... cajoling ...



... exhorting ...



... reminiscing ...



International House



Goldfish?



Scientifically prepared



Cymru Am Byth



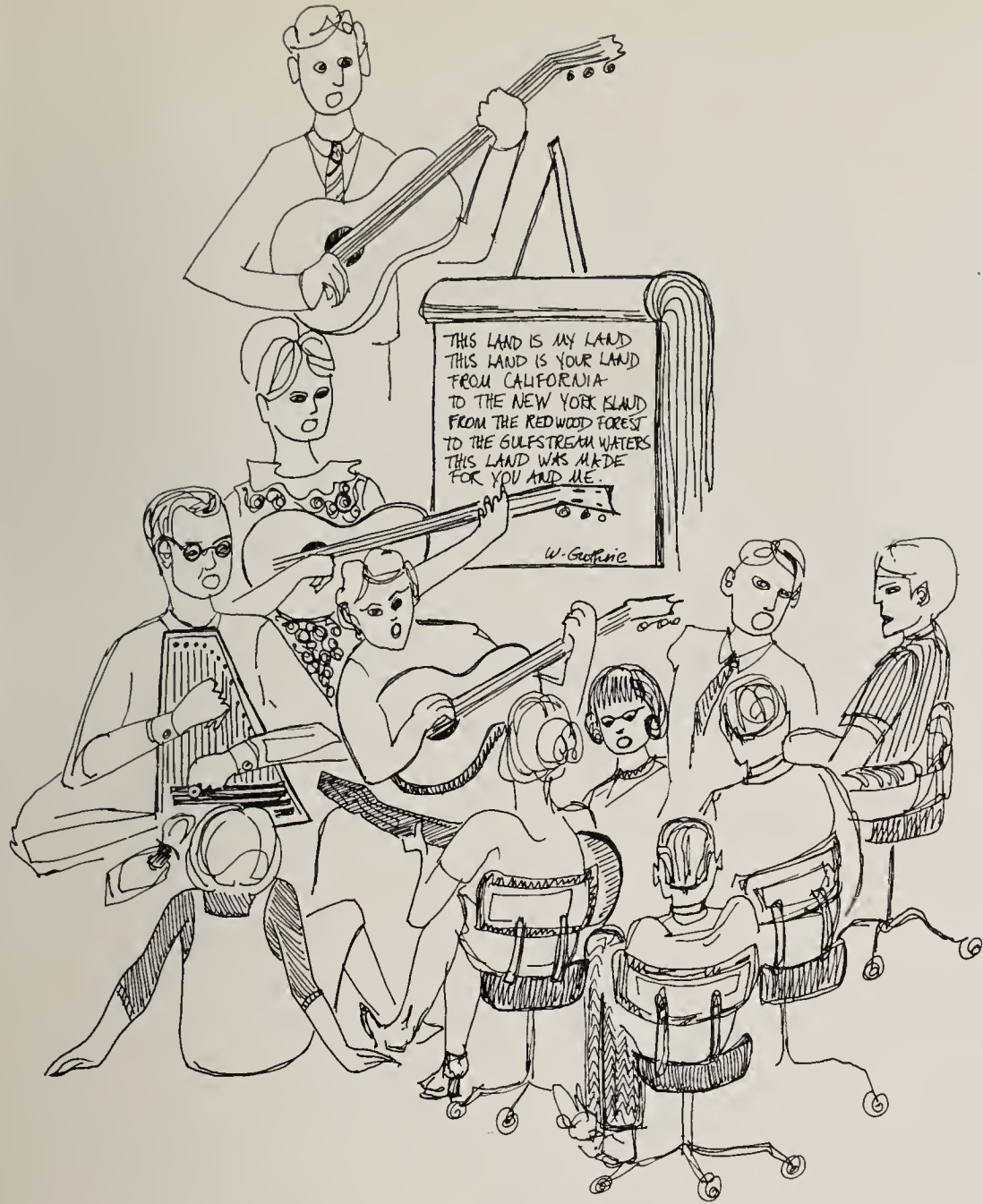
Try this line



SOCIAL HOURS

Panamanians





SUNDAY EVENING SINGS

Guitarristas



Rock a bye



Oriental Queens



Candid Camera



Business is slow

Pilgrim Table





Thank you, Santa



Deck the Halls



Are you real?



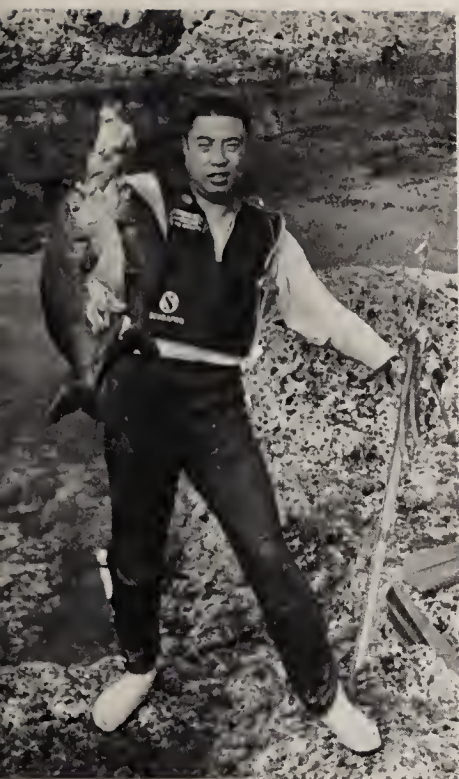
The Playroom

Expectation



Switches for Bobby





A dollar the lot



ICE SKATING ON THE DUCKPOND

The Vigilantes

DOG-YEAR

Bébédine, Bébédine, where have you been?
I've been to Harvard to see the Dean.
Bébédine, Bédédine, what did you there?
Fourfold tables under his chair.
My name has plenty of a's, b's and even a d,
But I never knew where, oh where, was my c.
I sniffed and I searched under every tree
And found it at last in Epi l ab
So my eleven dog-years have not been in vain.
What would I learn if I came here again?

BEBEDINE FABIA



Scrimshaw on Food





Professional socialites



Still life



Parranda Latino Americano



The Vanderbilts

We've struggled through our Biostat.
 The mean, the mode, the skew.
 We've learned of t and p and n;
 Of letters not a few.
 We've studied all about the fog.
 We've learned of Dr. Snow.
 We've "prevalenced" and "incided"
 And searched for cause just so.
 We've learned about the ancient Greeks;
 The early healing art.
 Egyptian, Roman, Byzantine.
 Each nation played its part.
 We've talked about the vitamins;
 And endo-mesomorphs.
 Of food record, and food recall,
 Obesity and dwarfs.
 We've learned a lot about ague
 We've studied schistosomes.
 And kissing bugs, and tsetse flies;
 Mosquitos in the home.
 We've learned of the effect of heat
 And also that of cold.
 Of dust in air; improper light;
 Radioactive gold.
 We've talked about too many births.
 On Yap there are too few!
 We've gone from Yap to India
 And then down to Peru.
 We've talked about the world's health needs;
 We've mentioned mental care.
 We've made field trips; we've "seminared".
 We've discussed Medicare.
 We faithfully have read each stack
 Of mimeographed quotes.
 We've learned how to conceptualize.
 (Just memorize the notes.)

To Public Health Practice I ab
 K is for the Knowledge that was lacking.
 L is for the Light that didn't dawn.
 A is for the Awful fear attacking.
 R for "Reasons" from the memory gone.
 M is for the Many things unlearned.
 A for Answers that were left as blanks.
 N is for the New leaf that was turned.
 Still to all in PHP we give our Thanks.

ROBERT GLOOR

Happy New Year



Man from Mars

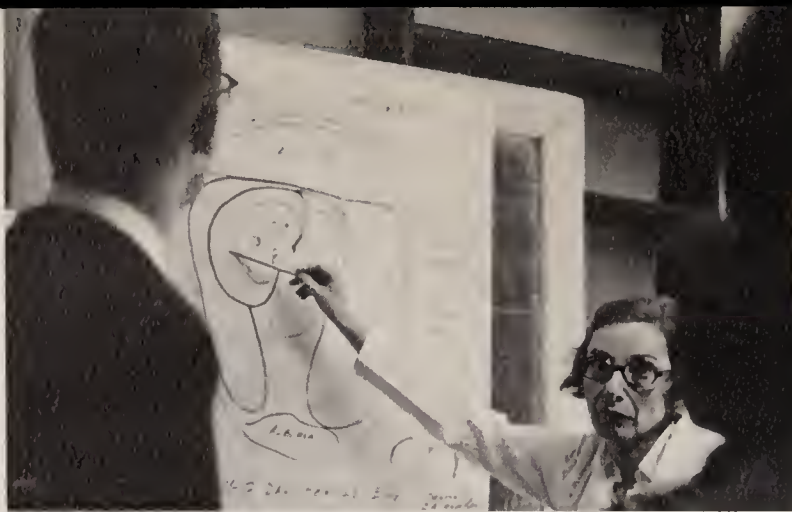


That's how!





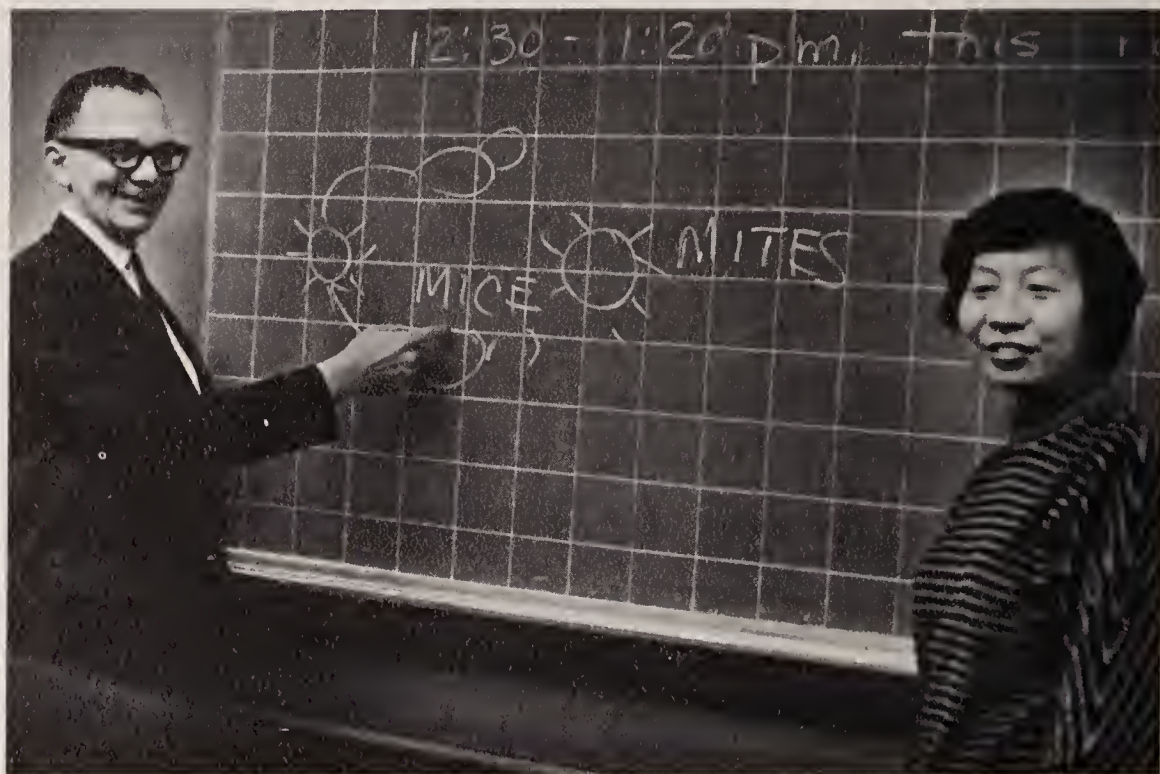
Hippocrates



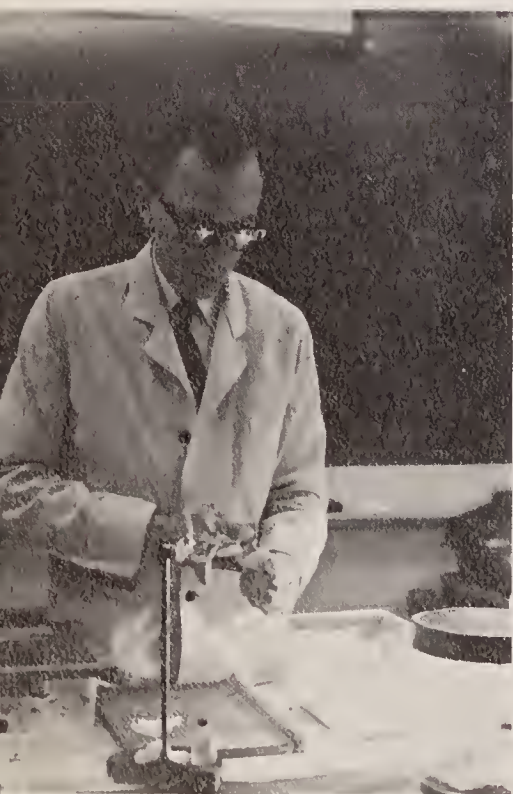
Fertile egg?



Add one egg



Of mice and mites



Of mice



And men



Order please



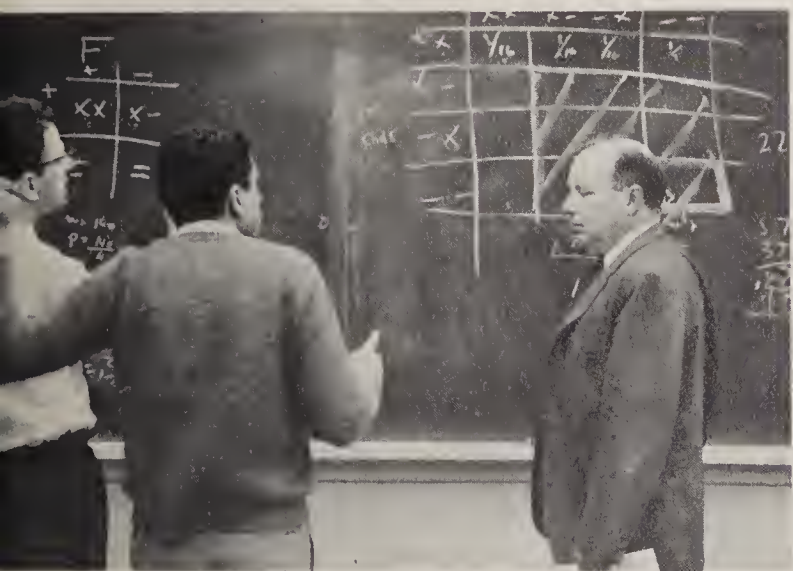
Ouch!



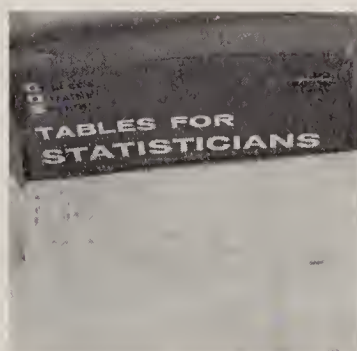
Ski reports here



In Maine we . . .



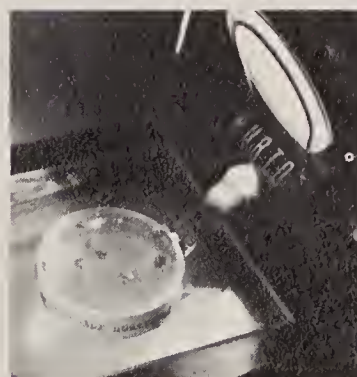
Normal deviates



Budding statisticians

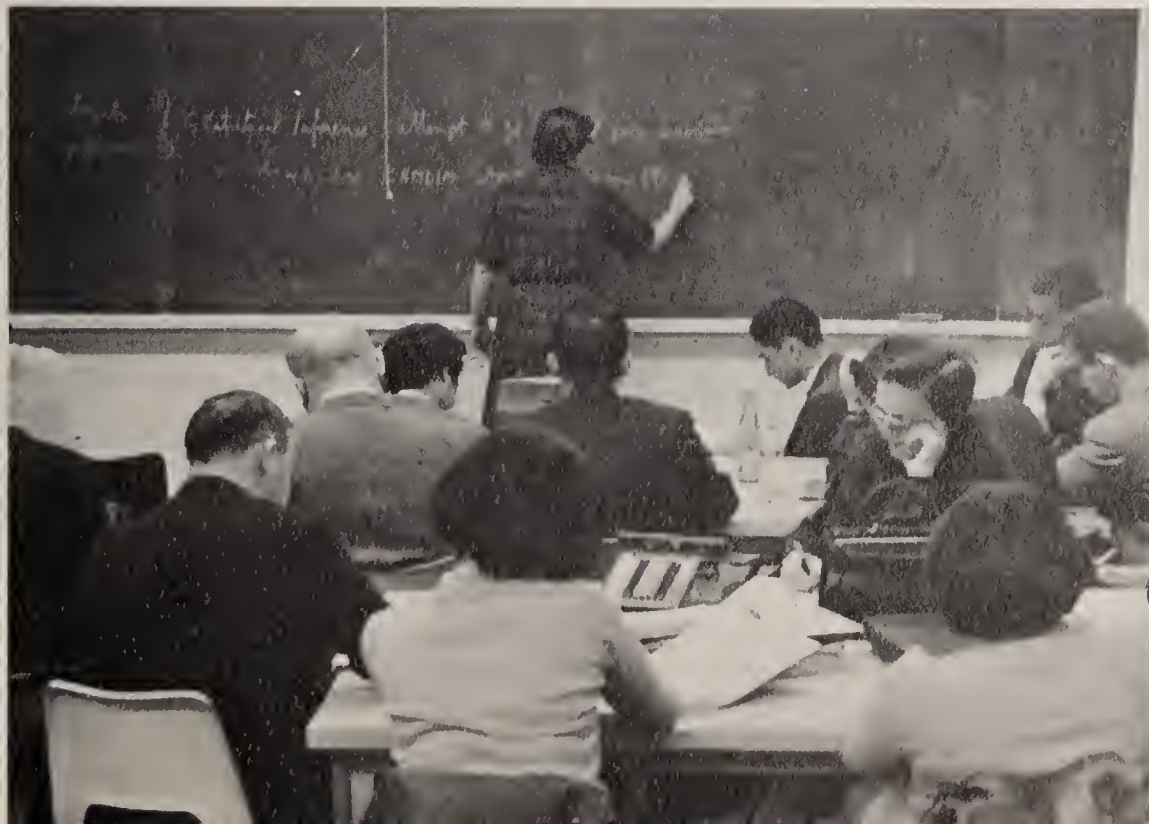


My line is fertility, etc.



Dermacentor Andersoni

Saturday review



It's 3:20

D.P.T.?



...We will remember...

LESLIE SILVERMAN



Professor Leslie Silverman died at his home in Dover, Mass. on March 4, 1966, at the age of 51. He came to Harvard in 1937 as a Gordon McKay Scholar after receiving a B.S. in Mechanical Engineering from the University of Illinois and an M.S. from Rutgers University. He was awarded an M.S. in Engineering and a Doctor of Science degree in Industrial Hygiene by Harvard. Appointed Instructor in the Department of Industrial Hygiene in 1939, Dr. Silverman became Professor of Engineering in Environmental Hygiene in 1958 and Head of the Department of Industrial Hygiene in 1961.

For more than 25 years, Leslie Silverman's career was distinguished by his teaching and his highly original research in the environmental health sciences. His innovations included contributions to the measurement of respiration, design of respirators, and measurement of air contaminants. He

founded the pioneering Harvard Air Cleaning Laboratory and became its first director. In addition to authoring some 300 scientific and engineering papers, he was the patent holder for more than 20 inventions associated with the environmental health sciences. He held membership on many national and international scientific committees and commissions, including the chairmanship of the Statutory Advisory Committee on Reactor Safeguards for the United States Atomic Energy Commission.

Leslie Silverman will be remembered best by his students and colleagues for his extraordinary fund of scientific and engineering knowledge, which he shared with courtesy, patience, and generosity; for his inexhaustible vigor in scientific investigations; and for his keen wit, which made every association with him a delightful experience. He was an inspiration to generations of students; his career provided students and colleagues with a clear standard of professional excellence.

M. W. F.

